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SIGMUND STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

RECOMMENDATIONS REPORT

SAN FRANCISCO RECREATION AND PARK DEPARTMENT

July 2003

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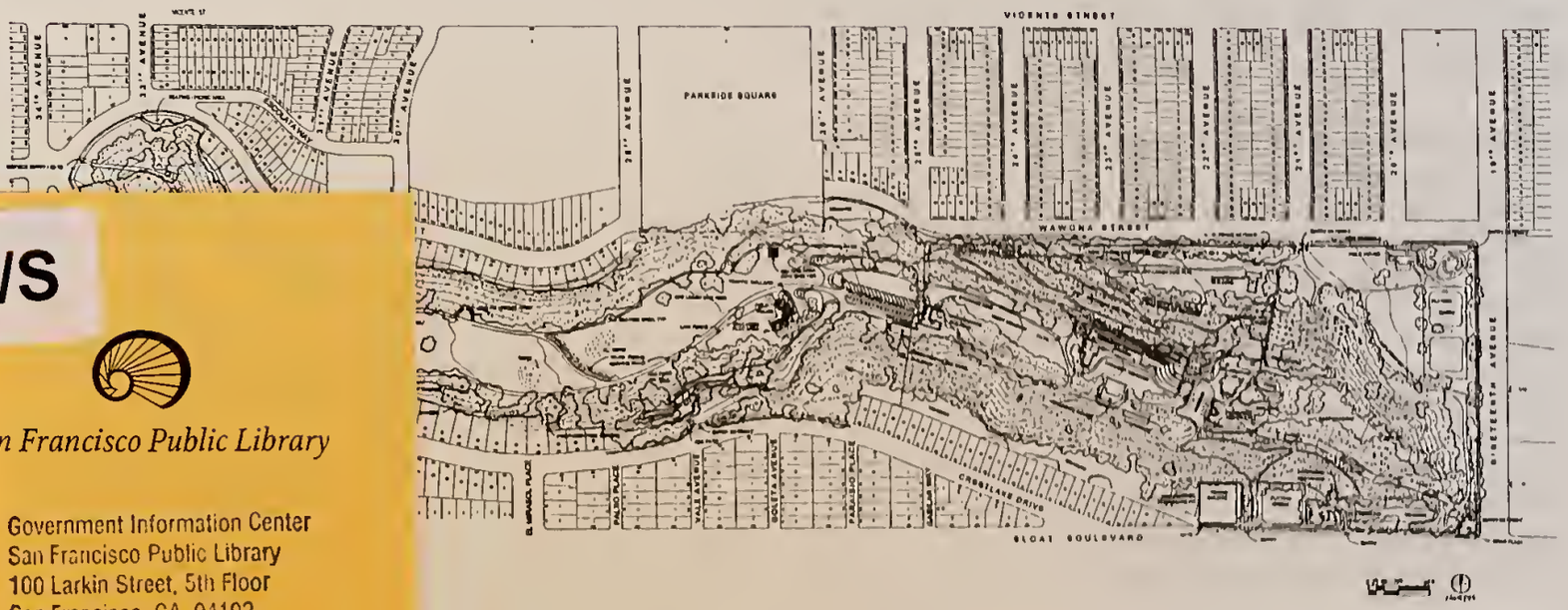
SIGMUND STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN



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WAWONA STREET
RETAINING WALL AS NECESSARY
PINE LAKE
PROPOSED WATER LEVEL
EXISTING WATER LEVEL
BRIDGE
LAKE ACCESS/ OVERLOOK
BBQ PIT / PICNIC AREA
SEATING AREA, TYP.
TRAFFIC BOLLARD
OFF LEASH DOG AREA
FIELD HOUSE
LOW FENCE
ENCLOSED PLAY AREA
BERM
HA-HA FENCE
SERVICE ROAD
ADA PATH 5% MAX
OVERLOOK
WATER SOURCE
PROPOSED TREE SCREEN
ENTRY GATEWAY
ADA PATH
CRESTLAKE DRIVE
ESCONDIDO AVEUNE
CONSTANSO WAY
EL MIRASOL PLACE
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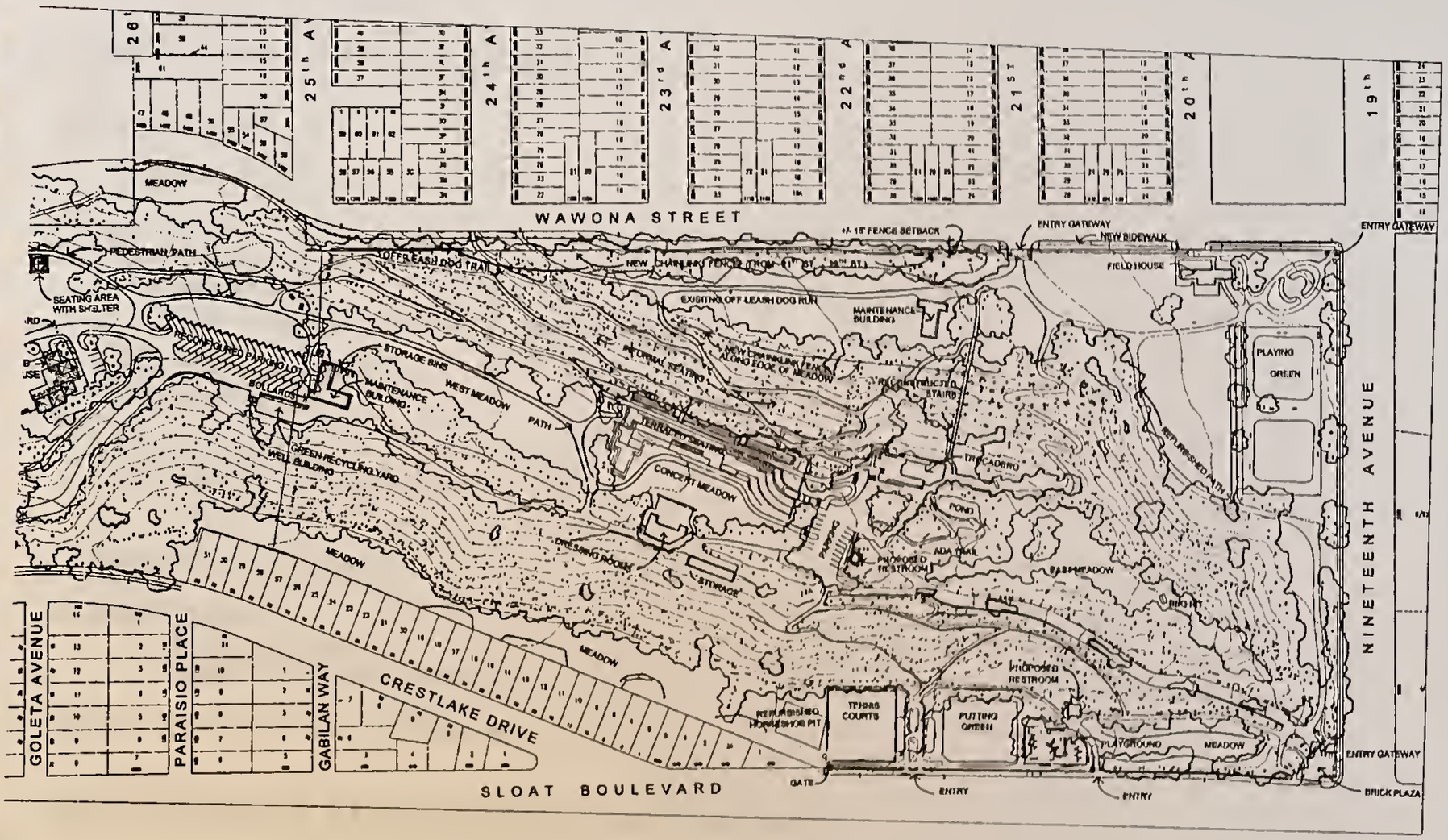

STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

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INTRODUCTION

The Need for Improvements
The Improvement Plan Process
Executive Summary

INTRODUCTION

THE NEED FOR IMPROVEMENTS

A Unique Resource

Stern Grove and Pine Lake Park together present one of the most unique park settings within the City of San Francisco. With a total of 64 acres, the parks function as one facility and provide a range of opportunities for recreational and cultural activities. The size of the park alone allows for an uncommon experience of separation from the urban cityscape. With the valley of the park resting about 100 feet below the street-level entrances of the surrounding neighborhood, this separation from the city is dramatically enhanced. The park's rustic character has distinguished the park landscape as a setting for activities not usually offered in the midst of a dense urban environment.

The land which now comprises Stern Grove and Pine Lake Park has been used for recreational and leisure activities for over a century. * Today, the parks are used as a popular facility for walking and hiking, dog-play, picnicking, and a variety of active uses such as tennis, croquet, and horseshoes. Most notably, the Rhoda Goldman Concert Meadow in Stern Grove provides a dramatic setting for Sunday summer concerts, which offer world-class performances free to the public. These free concerts began in 1938, not long after Rosalie M. Stern deeded her property over to the City, with the provision that it forever be used only for recreation and leisure. (*See the *Introduction* of the *Conceptual Design Report* for an elaboration of park history, function and use.)

Although Stern Grove and Pine Lake Park is functioning as a recreational setting, the facility is in need of attention. Shrinking City budgets, lack of maintenance staff, and increased demand on Recreation and Park resources have resulted in decades of less than optimal upkeep.

In 2001, the Department of Public Works was commissioned by the Recreation and Park Department to perform a comprehensive assessment of the facility. The assessment was the first phase in the park improvement planning process.

THE IMPROVEMENT PLAN PROCESS

Overview

In March of 2000, the citizens of San Francisco passed Proposition A, a $110 Million General Obligation Bond, and Proposition C, a continuation of the Open Space Fund, to implement park improvements and renovations under the Recreation and Park Department's Capital Improvement Plan. The Recreation and Park Department identified city parks in disrepair, and prioritized them based on need for renovation.

Stern Grove and Pine Lake Park were identified as a high priority for renovation. Although the facility is one of the larger open spaces within the city and has hosted concerts for many years, it has suffered from lack of maintenance and funding.

In 2001 the San Francisco Recreation and Park Department began a planning process for Stern Grove and Pine Lake Park. The process was structured in three phases: Phase I - Site Assessment; Phase II - Improvement Planning; and Phase III - Implementation. This Conceptual Design Report represents the culmination of Phases I and II, as discussed below. Please refer to section 3.0 - Phasing and Implementation, for recommendations related to Phase III.

Phase I - The Site Assessment

In Phase I, the City of San Francisco's Department of Public Works was commissioned by the Recreation and Park Department to perform the assessment of the facility.

The Assessment Report was published in July 2001. It involved a comprehensive evaluation of the parks' physical and natural systems, buildings and infrastructure, amenities and use. In addition to documenting the existing conditions, the report identified inadequacies of park systems, features, and function. Particular attention was paid to failing infrastructure, buildings and amenities, which posed immediate or potential hazards to public health, safety, and welfare. In addition to outlining specific deficiencies, the report outlined needs for mitigation of problems identified.

With the assessment complete, the process of planning for park improvements was undertaken.

Phase II - The Park Improvement Plan

In August 2001, the Department of Public Works park planning team, led by city landscape architects, continued its work for the Recreation and Park Department with the initiation of the improvement plan process. The beginning of this phase included organizing and facilitating a series of community workshops to learn the concerns and desires of park neighbors and users for potential changes within Stern Grove and Pine Lake Park.

Concurrent with the initiation of this phase, the Stern Grove Festival Association retained the services of The Office of Lawrence Halprin, landscape architect, to consider park improvements, with a focus on concert facilities and function. Additionally, the Stern Grove Festival Association donated the services of Lawrence Halprin's office to the Recreation and Park Department to assist with overall park improvement planning. Consequently, the DPW planning team has worked closely with Lawrence Halprin and his staff during the community workshop process, and in developing a scope of potential park improvements.

Public Outreach and Community Workshops

A series of three workshops were held during the fall and winter of 2001-2002. The workshops began with a presentation of the Assessment Report to the community, and an outline of park deficiencies identified therein. The

workshops then moved into a discussion of what improvements might be made that would go beyond basic improvements identified in the Assessment.

At the first workshop, community members were asked what they most loved about the parks, what is special about the place, how they used the parks, and what should be changed or improved. City landscape architects facilitated the workshop, recording public concerns and suggestions through verbal discussion and through the distribution of written questionnaires. Based on the responses, the questionnaires proved to be an equal, if not more valuable tool for soliciting park user input, than did the recording of verbal responses and comments.

At the second workshop, potential improvements were discussed and debated. Priority for potential improvements were evaluated and voted on by the community. The top three highest priority concerns for the parks were: 1) The health and water level of Pine Lake, 2) Maintenance and management of trees, and 3) Erosion control issues. Additional concerns included general maintenance and staffing, repair of trails and stone walls, impacts from concerts (parking, trash, size of crowds), park security, and management of off-leash dog play. At the conclusion of the second workshop, a consensus for a scope of park improvements had been reached between the design team and the community attendees.

The project team utilized the results of the second workshop to develop a detailed and comprehensive scope of proposed improvements. At the third workshop, held in March 2002, a Conceptual Design was presented which showed the desired changes the community had identified as having high priority. Along with the illustrative plan, the comprehensive scope of proposed improvements was reviewed. The design team noted community response to both the plan and scope, and utilized these comments to continue the plan development process.

The Conceptual Design

During the spring and summer of 2002, the design team proceeded to further develop the Conceptual Design, working out the details for recommendations contained within this report. A refined plan was brought back to the community for review and comment prior to the publishing of this report, and final revisions were incorporated.

The Conceptual Design report has been published as a separate document and is the first of two Stern Grove and Pine Lake Park Improvement Plan reports.

The Conceptual Design report contains a descriptive and illustrative overview of the Improvement Plan and outlines the detailed recommendations proposed in this report.

Improvement Recommendations Report

This *Improvement Recommendations Report* for Stern Grove and Pine Lake Park contains a comprehensive scope of proposed improvements to almost every facility, system and feature of the park landscape and infrastructure. As the second document comprising the Park Improvement Plan, this report contains the detailed recommendations for renovation, replacement and enhancement of the park landscape, infrastructure, buildings, and amenities, as outlined in the *Conceptual Design Report*.

Phase III – Implementation

The comprehensive scope of improvements recommended in this report outlines the renovation or addition of features and facilities throughout every level of park systems, buildings, and structure. The breadth and depth of this proposed scope of improvements has required that a phasing strategy be developed to structure groups of park improvement work to be

implemented over five separate phases.

The five proposed phases of work are: 1) Pine Lake and Pine Lake Meadow Phase, 2) Performance Area Phase, 3) Pine Lake Field House Phase, 4) Trocadero Renovation Phase, 5) Landscape and Infrastructure Phase and 6) Park Perimeter and Entrances Phase. Each phase of work is associated with the renovation and improvement of a major park facility, or group of like features. A detailed description of proposed improvements under each identified phase is provided in the Introduction of the *Conceptual Design Plan* document of the *Park Improvement Report*.

Phasing Strategy

The Recreation and Park Department is planning to begin the implementation design process in spring 2003. Concurrently the Stern Grove Festival Association will be initiating fundraising and implementation process for the concert related facility improvements. By late 2003, the first phase of park renovations should be commencing.

A prioritization of phases for implementation of work has been developed based on the following criteria: A) Community priorities for improvement, B) Park needs (heath/safety related infrastructure, erosion control, etc.), and C) Funding identified and available to the Recreation and Park Department.
Please refer to the *Conceptual Design Report* for a detailed discussion of the Phasing Strategy.

Conclusion

The Park Improvement Plan represents over one year of collaborative planning efforts between the Recreation and Park Department, the Department of Public Works, the Office of Lawrence Halprin, the Stern Grove Festival Association, and numerous formal park user groups, and incorporates the invaluable input of San Francisco citizens who use Stern Grove and Pine Lake Park on a daily basis.

EXECUTIVE SUMMARY

Overview

The Stern Grove and Pine Lake Park Improvement Plan makes recommendations for comprehensive improvements throughout the park. The summary and scope of improvements proposed is outlined below.

Park Landscape

Forest Management
A Forest Management Plan is currently being developed and will be published as a supplemental report to the Improvement Plan. The Forest Management Plan will include an assessment of park trees for health and potential hazard, will provide remediation measures for hazardous trees, and will make recommendations for supplemental forest planting and maintenance.

Erosion Control
Erosion within the park is due predominantly to the effects of surface runoff from rains and storms. An Erosion Control Plan has been prepared to address erosion problems in the park and focuses on mitigative and preventative measures. The areas addressed are: Trails and slopes, specific focus areas (e.g.: meadows, Pine Lake slopes, etc.), surface drainage, park use patterns, and general erosion control measures. Additionally, an Implementation Plan is provided.

Fire Protection
Fire prevention recommendations include expansion of the existing hydrant system, addition of fire panic alarms, and improvements to emergency vehicle access and circulation within the park.

Lakes and Water Features
Recommended improvements to Pine Lake include raising the water level, removal of sediment and invasive aquatic plants, and stabilization/protection and enhancement of lake edges.

Wildlife Habitat
Habitat improvements are considered in two divisions of the park landscape: *Lake and Water Features*, and *Forest and Meadow Areas*. Lake and Water Feature improvements include removal and control of invasive aquatic plants, providing a vegetated buffer along the lake edges, and enhancing riparian habitats. Forest and Meadow Areas include important upland habitat for species such as migratory songbirds. Improvement recommendatons for these habitat areas include incorporation and enhancement of areas of native vegetation for forage, shelter, and movement corridors, and management of the forest for health, sustainability and structural diversity. A park-wide vegetation enhancement plan is also included that provides lists of species appropriate for consideration in the enhancement of park habitat areas.

Park Furnishings
Recommendations are made for the selection and replacement of park furnishings with consistent, durable, attractive furnishing types to be used consistently throughout the park. Additionally, furnishings and access to them must be ADA accessible.

Signage
Signage in the park should be improved for consistency, clarity and appropriate function. A signage master plan should be developed to include comprehensive park way finding, information/regulations, directions/advisories, announcement of features, and ADA accessibility.

Circulation

Automotive Circulation, Parking and Roadways
Parking lots and roadways should be repaired/resurfaced. A reconfiguration of the Pine Lake Parking Lot will allow more efficient parking and enhanced pedestrian circulation through the park valley. Enhanced traffic and parking signage will better control vehicular circulation within the park. Improvements must include

accommodation for ADA accessibility requirements in the form of additional blue-zones and enhanced paths of travel from parking areas to facilities.

Pedestrian Circulation
Many park paths and trails should be improved for both general circulation and erosion concerns. Informal paths in poor condition and areas of steep, erosive soils should be closed and re-vegetated. The stone staircase in Stern Grove should be reconstructed. A new east-west path through the park valley will provide a consistent, quality pedestrian experience linking park meadows and facilities. ADA enhancements to circulation will improve access between street-level park amenities. A new ADA accessible path from the Crestlake/Vale entry will provide a separation of pedestrians and vehicles for access to the park valley.

Accessibility
Federal law requires park-wide accessibility improvements. All park buildings and activity areas require ADA access. ADA modifications will require significant reconstruction of some areas, and minor enhancements at others. New circulation and access routes will be provided to park buildings, picnic areas and facilities. Park amenities and furnishings will be replaced with ADA compliant models.

Recreation Areas

The goals relating to recreation areas in Stern Grove and Pine Lake Park include the following: safety throughout, aesthetically pleasing and provide for the needs required by the activity. Furthermore, access for all must be insured, especially the mobility impaired, senior citizens, and families with children.

Leisure Recreation
Stern Grove and Pine Lake Park make a perfect destination for a leisurely outing. The network of trails and pathways provide for interesting hiking or bicycling, while the expansive meadows lend themselves to sunbathing, reflection, informal games and picnicking. Recommended improvements include:

- Repairing and carefully maintaining trails.
- Implementation of strategies to deter the formation of voluntary paths.
- Install automated irrigation in the meadows.
- Add a new picnic area and new benches.

Active Use Areas
Stern Grove and Pine Lake Park offer a unique collection of active uses for structured recreation including: a children's play area, golf putting green, tennis courts, croquet greens and a day camp. The demands for recreation need to be balanced with the sylvan and pastoral setting. Emphasis should be placed on improving and maintaining existing recreational active use facilities rather than on creating new facilities.

Dog Play Areas
Stern Grove and Pine Lake Park are destinations for dogs and dog walkers. Currently there is a designated off leash dog area near the Wawona Clubhouse. This dog area is usually empty. The dog walkers much prefer the ever-popular Pine Lake Meadow. It has been recommended that a portion of Pine Lake Meadow be designated as an off-leash dog play area.

Special Areas

Park Entrances
The entrances to Stern Grove and Pine Lake Park are undistinguished and provide a characterless transition into the park. In some cases, separation of pedestrian and vehicular circulation is absent, and the park lacks an ADA accessible route from street level to the park valley. Park entrances should be improved to provide a clear, dignified entry experience. Improved entrances should signal a change into the park landscape, slow traffic, and provide signage to orient visitors. The Improvement Plan proposes to make significant improvements at

the main vehicular entries at 19th Avenue/Sloat Boulevard, and Vale Avenue/Crestlake Drive. Vehicular gateways are proposed at both of these entries and a new accessible path to the park valley is proposed from Vale Avenue/Crestlake Drive. The other park entries should also receive some improvements with the goal of providing dignified, clear entry experiences, which reflect the exceptional character of Stern Grove and Pine Lake Park.

Performance Meadow
The Performance Meadow is the location for the annual free concert series hosted by the Stern Grove Festival Association. The meadow provides a dramatic setting for Festival performances and is also occasionally used for other events like graduations. Though the popularity of the festival series has grown, the concert meadow and facilities has not been maintained or developed to accommodate large crowds. The meadow itself, and the adjacent slopes have suffered damage and erosion due to concertgoers sitting and traversing the forested slopes.

Proposed improvements to the Performance area include replacement of the stage and backstage buildings, new terraces to better accommodate seating, and improvements to circulation to better control crowds and lessen impacts to park vegetation.

Pine Lake
Pine Lake and its banks is a candidate Significant Natural Area under the Recreation and Park Department's Natural Areas Program. The lake is a unique natural resource in an increasingly urban environment. This urbanization has led to the degradation and destabilization of Pine Lake. Proposed improvements include raising the lake water level, invasive aquatic vegetation management, bank vegetation enhancement, and path and trail improvements around the lake.

Buildings and Structures

New Buildings, Structures and Renovations
Several new buildings, structures and renovations are proposed to serve the public's needs at Stern Grove and Pine Lake Park. Pine Lake Field House and Barbeque area is outdated and the location awkward for the summer camp attendees. At the Trocadero Clubhouse the entrance is not ADA accessible, the wooden front porch is deteriorating as well as many building amenities being outdated. Existing Maintenance Facilities are inadequate for housing of maintenance equipment and providing work areas. There is an existing public restroom, which serves the active use areas along Sloat Boulevard, that is outdated and does not meet ADA requirements.

Proposed improvements to park buildings include construction of a new Pine Lake Field House in a new location near the entrance of Pine Lake Meadow. The new Field House will incorporate a meeting room, restrooms, accessibility improvements an outside patio barbeque and lawn area. Proposed improvements to the Trocadero Clubhouse include new ADA path from Stern Grove Parking lot, new accessible restrooms, a new deck, ramp and stairs, replacement of the fireplace and updated appliances. A new Corporation Maintenance Yard and Building are proposed. The building will serve as the main maintenance building for the park and will house maintenance equipment and supplies. The Corporation Maintenance Yard will be separated from the parking area by landscaping, fencing and a gate and will include backstop niches for storage of soil, gravel, bark and sand. If space permits, the new yard will include space for trash and recycling dumpsters with an adjacent truck turn around.

Since it would be costly and impractical to make the existing restroom ADA accessible, a new accessible restroom building is proposed to serve the Sloat Boulevard area. The existing restroom building will be

converted to a Gardener's Storage building.

Building Electrical Systems
There are various separate electrical power supplies to Stern Grove and Pine Lake Park. Lighting levels are too low and inefficient in some areas and do not meet current code or Title 24 requirements. In general, the power distribution system meets site needs but is old, deteriorated, and could pose a potential fire hazard.

The Electrical Master Plan indicates at which locations electrical service can be preserved, at which locations new electrical service is required, and at which locations existing electrical service should be discontinued. If a building is to be demolished the electrical equipment, conduit, and wiring must be removed or abandoned in accordance with applicable codes and standards. New buildings shall have new lighting and electrical systems, which meet all applicable code requirements. Existing buildings to remain shall be updated to meet current codes.

Building Plumbing, Fire Sprinkler & HVAC Systems
Overall, the existing plumbing fixtures and systems are in adequate condition. However, except for a few buildings in Stern Grove, the plumbing fixtures are not ADA compliant. Also, the Trocadero Clubhouse is the only building that has a fire sprinkler system.

The Trocadero Clubhouse fire sprinkler system will be upgraded. New buildings will require plumbing fixtures and mechanical equipment based on their proposed usage. Fire sprinkler systems are proposed in buildings where there are numerous public gatherings if not required by code. Emergency eye wash/shower stations and service sinks are proposed at locations where park personnel may come into contact with hazardous chemicals or substances.

Hazardous Materials Remediation and Removal
The Hazardous Materials Remediation and Removal assessment is a multi-phased process. The Baseline Phase I Environmental Site Assessment for Stern Grove and Pine Lake Park was conducted in 2001. This assessment focused on the buildings, structures and sites for future construction within the park. A comprehensive hazardous materials survey to identify hazardous materials in buildings and structures and sites scheduled for demolition, renovation or construction has been completed as part of the park Improvement Plan. This survey report has been published as a separate document and is available through the Department of Public Works.

Utilities and Infrastructure

Water System
The majority of the existing piping for both Stern Grove and Pine Lake Park dates back to the 1930's, is in poor condition, undersized for the parks' increasing uses and requires constant repairs to keep the system operational for basic requirements. In addition, the Wawona Clubhouse and Pine Lake Park's domestic water supply are directly connected to their respective surrounding irrigation system's piping, presenting a possible health hazard should back siphonage occur and contaminate the domestic water.

The existing irrigation systems throughout the two parks and surrounding areas consist almost entirely of quick couplers, which require the gardeners to spend the majority of their time manually watering the lawns and landscaped areas. The only automatic sprinkler system is located at the Croquet Greens off Wawona Street and 19th Avenue. Also, there is an insufficient number of fire hydrants and drinking fountains in both Stern Grove and Pine Lake Park.

It is recommended that all of the existing piping mains for both the domestic water and irrigation water be replaced with a minimum of 4-inch ductile iron pipes for domestic water and 6-inch ductile iron pipes for irrigation. An automated irrigation system should be installed for more efficient use of water, gardeners' time and proper plant care. In addition to the installation of an automated irrigation system, the use of well water for irrigation should be investigated. Drinking fountains of the three bowl style and hose bibs are proposed throughout the park, especially at the meadows and entrance areas. Additional fire hydrants should be located throughout the park.

Sewer System

The existing sewer system located in Stern Grove and Pine Lake Park consists of side sewer laterals, storm water inlets, main gravity flow sewer lines, lift stations and force mains. The storm systems consist of storm water inlets, piping and natural open channels. The storm flows collected are channeled to either a lift station, the Fish Pond or allowed to drain naturally within the park area.

Proposed improvements to the sewer system include updating and cleaning out the existing system, developing a surface drainage system based on the Erosion Control plan, developing alternatives to restore the connection between the Reflecting Pond and Pine Lake and providing a sewer system for the newly constructed facilities.

Sewer System Force Main Systems

The existing sewage system in Stern Grove and Pine Lake Park is in poor condition, with only two of three sewage pumps operating and worn discharge piping and supports.

Due to the heavy use of both Stern Grove and Pine Lake Park, a reliable means of disposing of domestic sewage must be available for the public and Recreation and Park Department personnel at all times. With the existing Sewage Pumps Shed in its present condition, there is little assurance that this will be possible in the foreseeable future. It is recommended that a new Stern Grove Sewage Lift Station be built and placed into operation as soon as possible.

Electrical System

The existing Switchboard at the Stage Area currently satisfies the need for power for sound and light equipment operation in that area. Depending on the load requirements of the new Stage and Performance Building, the existing State Area Switchboard, Transformer and feeders may be retained with possible modifications/relocation.

Site lighting improvements are proposed including replacing deteriorated shoebox style lighting with energy efficient fixtures that meet IES standard illumination levels and by providing lighting for reconfigured Pine Lake Parking Lot. Path Lighting is also proposed, but may require the installation of service pedestals if there is no electrical service nearby.

Natural Gas System

Natural gas is supplied to Stern Grove to serve the buildings in the vicinity of the Trocadero Clubhouse, including the Trocadero Clubhouse, the Ladies Convenience Station Restroom and the Dressing Rooms. This is adequate for current use. There is no natural gas service to Pine Lake Park.

Maintaining natural gas as opposed to electricity is proposed, as it will minimize operational costs. It is recommended that new natural gas service be provided to the new Pine Lake Field House and the new Maintenance Corporation Yard and lines should be extended for the Garage and Maintenance Storage and the Stage and Performance Building services.

Communication System

Stern Grove and Pine Lake Park has poor phone service with no additional communication systems such as PA systems or emergency

call boxes. One of the three pay phones in the park is not ADA accessible. The pay phones are heavily used during the summer concert season. While the overall condition of the phone lines is good, the lines are quite old and will eventually fail. The Minimum Point of Entry at the Trocadero Clubhouse needs replacement.

Proposed improvements to the communication system include installation of a new ADA compliant pay phone, relocation of existing phones to meet ADA requirements, adding emergency call boxes, replacement of the Minimum Point of Entry at Trocadero Clubhouse, replacement of existing phone lines and underground cables and adding additional phone lines.

Park Lighting
Existing lighting in Pine Lake Park and Stern Grove is minimal with lighting concentrated at the buildings, Stern Grove Parking Lot and the entry road from Sloat Boulevard, and 19th Avenue. Lighting in the rest of the park is non-existent.

New lighting is proposed in the following locations: Entry at Sloat Boulevard and 19th Avenue, Stern Grove Parking Lot, the accessible path connecting Stern Grove Parking Lot, the Trocadero Clubhouse and restrooms, the valley floor east-west pedestrian path from Stern Grove Parking Lot to the west end of Pine Lake Parking Lot, Pine Lake Parking Lot and the path between Pine Lake Parking Lot and the new Field House.

Maintenance and Operations

Maintenance and Operations Areas
Chronic understaffing and inconsistent guidelines have led to maintenance and operations neglect throughout Stern Grove and Pine Lake Park.

The foremost recommendation is to develop and publish a Park Maintenance and Operations Manual, which would provide consistency as well as serve as a tool to substantiate budget requests and documentation for grant applications. Other recommendations include focusing on maintaining both baseline and special features as well as encouraging volunteerism.

Park Management and Programming

Park Management and Security
Park Management in Stern Grove and Pine Lake Park has been inconsistent due to budgetary and staffing issues. Security in the park has not been an urgent issue, however the increase in events and visitor usage with diminishing police patrols may warrant some change.

In order to improve the efficiency and effectiveness of park management, development of a Maintenance and Operations Manual is recommended. Also, dividing the Area Supervisor into two positions, one focusing on Maintenance and one on Operations, creation of a Maintenance Supervisor position and creation of an Operations Supervisor position will make park management more efficient and effective. Lastly, improving security measures through vegetation thinning for improved visibility, increasing overhead lighting, installation of emergency call boxes, installation of park regulations and emergency information, providing kiosks for posting suspicious behavior and encouraging community vigilance will provide a proactive response to increased security.

Park Programming
Stern Grove and Pine Lake Park support a variety of programmatic uses including concerts, performances, event rentals, summer camps, senior citizen and community group functions and unique recreational group activities.

While programming at Stern Grove and Pine Lake Park is largely successful, a few proposed actions will improve the current

approach. These actions include maintaining the current concert attendance level, more close monitoring of the maintenance following concert events, moving Pine Lake Day Camp to the new Field House Facility, providing more space for indoor group gatherings in the Field House, separation of the dog area and the day camp and the official designation of an off leash dog area in Pine Lake Meadow.

Implementation and Phasing

Due to the broad scope of proposed renovation work at Stern Grove and Pine Lake Park, a phasing strategy has been developed which divides the entire project scope into six phases. Each proposed phase is focused around the renovation of a major park feature or group of features. The six proposed phases are as follows: Pine Lake and Pine Lake Meadow, Performance Area, Pine Lake Field House, Trocadero Renovation, Landscape and Infrastructure and Park Perimeter and Entrances.

PARK LANDSCAPE

Forest Management
Erosion Control
Fire Protection
Lakes and Water Features
Wildlife Habitat
Park Furnishings
Signage

PARK LANDSCAPE

Overview

This chapter provides discussion and recommendations for the the following systems and amentities within Stern Grove and Pine Park:

2.1 Forest Management
2.2 Erosion Control
2.3 Fire Protection
2.4 Lakes and Water Features
2.5 Wildlife Habitat
2.6 Park Furnishings
2.7 Signage

Fig. 2.0.1 – Pine Lake Park Meadow

FOREST MANAGEMENT

Overview

The Stern Grove and Pine Lake Park Forest began in the 1870's with seeding of Bluegum Eucalyptus. The park forest composition has grown to include Coast Redwoods, Monterey Pine, and a variety of other species.

Based on tree surveys by the Recreation and Park Department begun in 1983, Eucalyptus comprises over 70% of the park forest. It is estimated that over a third of Eucalyptus park trees are over 80 years old. (See Site Assessment for more information.) Ageing trees pose potential threats to homes near the park edges, as well as to high-use areas and facilities within the park landscape.

Although annual assessments are done in high-use areas, many tree issues are dealt with on an emergency basis only due to limited staff and resources. As the park forest continues to age, more maintenance and tree replacement will be required.

A Forest Management Plan is currently being developed and will be published as a supplemental report to the Improvement Plan. The Forest Management Plan will include methods of tree evaluation; assessment of species composition, tree condition, tree hazard and delineation; opportunities and constraints to sustaining the tree stand; and provide remediation measures for hazardous trees.

EROSION CONTROL

Overview

Wind, rain or gravity can cause soil erosion. Based on observed conditions, the majority of soil erosion present at the Stern Grove and Pine Lake Park (the Park) appears to be the result of rain and associated storm runoff. This Plan will therefore focus on mitigation measures available to reduce the likelihood for soil erosion related to storm runoff. The following areas are discussed (see Diagram 2.2-A for locations of trails and focus areas):

A. Trails and Slopes
B. Focus Areas (Meadow Areas, Toe of Pine Lake Slope, Wawona Area Garage, Slope at Crestlake Drive and Vale Avenue Entrance, Concert Meadow Slope, and Pine Lake Slopes)
C. Surface Drainage
D. Park Use Patterns
E. General Erosion Control Measures
F. Implementation Plan

For each general area of the Park, the following information will be presented:

- Area definition;
- Identification of the area soil erosion issues;
- Listing of contributing factors;
- Range of erosion remedies evaluated;
- Summary of expected remedy performance; and
- Recommendations for remedial action.

The remedial measures and their associated sketches are intended to be general in nature. The measures should be used as a guide in developing more detailed remedial designs based on site-specific characteristics for each individual area affected by erosion issues. Each remedial measure should be evaluated further by a qualified professional prior to implementation.

A. Trails and Slopes Remediation

Overview of Observed Trail Issues

A number of issues contributing to trail erosion have been identified throughout the Park, including user-created informal (dirt) trails with excessive erosion potential, obstructed drainage swales adjacent to trail rock walls, potholes and edge problems in formal (paved) trails, lack of drainage features, fairly impermeable soil, and poor trail markings. The majority of existing trail erosion issues are the result of a combination of excessive or unintended pedestrian use, insufficient surface durability and erodable surfaces, uncontrolled storm runoff, and insufficient maintenance.

Trail Remediation Recommendations

We have identified several general remedies that can be employed at Park trails to improve performance. Table 2.2.1 summarizes the remedies identified, their intended application, benefits, and limitations. As noted in the table, some of the remedies are illustrated on figures.

Table 2.2.1 – Summary of Potential Trail Remedies

Remedy	Application	Benefits	Limitations
Clear and regularly maintain existing swales adjacent to rock walls (Diagram 2.2-B)	• Informal trails with existing rock walls and swales	• Historical feature already exists • Reduces water on trails • May aid in directing runoff to Pine Lake • Serves as rudimentary sediment trap	• Does not directly improve trail surface • May require repair • Does not increase infiltration of runoff
Construct new swales adjacent to trails	• Trails in high runoff areas	• Reduces water on trails • May aid in directing runoff to Pine Lake • Serves as rudimentary sediment trap	• Doesn't improve trail surface • Does not increase infiltration of runoff • May be labor intensive • Requires sufficient area adjacent to trail • May require use of heavy equipment in hard-to-access locations
Add flexible cellular confinement product to trail surface (Diagrams 2.2-B, 2.2-C, and 2.2-D)	• High-use informal trails in areas with heavy runoff	• Improves trail surface • Minimizes erosion of trail • Reduces water on trails • May aid in directing runoff to Pine Lake • Aids in reducing movement of soil down slopes	• May be too wide for narrowest trails • Cost may limit ability to implement
Repave formal trails	• High-use formal trails	• Can incorporate filter fabric over compacted base for longer lasting and higher quality trail • Can be graded to aid in directing runoff	• May require heavy equipment in sensitive areas • May provide limited runoff control and erosion protection improvement on slope trails for relatively high cost
Patch formal trails	• Low- to medium-use formal trails	• Eliminates trip hazards and continued erosion from areas missing asphalt	• Cannot significantly alter/improve existing trail slopes to aid in runoff control
Revegetate informal trails	• Informal trails recommended for closure	• Reduces bare soil and erosion potential	• May require several seasons to become fully established

We have identified several trail remedies for each general Park trail area (see Diagram 2.2-A and 2.2-E). These remedies are general in nature and should receive further evaluation by a qualified professional prior to implementation.

For the most used informal trails, which are generally located in the eastern half of the park on the northern and southern slopes, we recommend a combination of remedies. It is suggested that the existing rock swales located adjacent to the rock walls on the northern slope be cleared of soil and plant debris and further evaluated for use as a storm runoff drainage feature. A preliminary investigation revealed that the swales appear to be present next to most rock walls on the northern slope and are approximately one-half to one foot deep and one-half to one foot wide. Optimizing the performance of the swales will require repairs such as resetting or replacing dislodged or missing rocks and regular cleaning and maintenance.

The construction of new swales adjacent to and on the uphill edge of informal trails that currently do not have swales is also recommended to aid in the collection and conveyance of storm runoff while reducing standing water on the trails.

For areas with high runoff (generally defined as greater than 1 cubic foot per second) and without sufficient lateral space to install a swale adjacent to the trail, the use of a flexible cellular confinement product graded to convey stormwater and improve movement of water through the trail surface is recommended (see Diagrams 2.2-B and 2.2-C). These products are available in rolls as narrow as 4 feet, making them suitable for most Park trails. Water flowing down slopes and towards trails with cellular confinement will be redirected, depending on the quantity of runoff. The cellular confinement will first act to increase infiltration through the coarse cell backfill and into the trail subgrade. Once the cellular confinement trail subgrade is saturated, excess runoff will flow down the trail through the cellular confinement and coarse backfill. If the quantity of runoff exceeds the capacity of the cellular confinement backfill, it will begin to pool on the surface and continue to flow down the trail. The trail surface grading should allow sufficient carrying capacity of storm runoff for most storm events. Each section of the trail recommended for a cellular confinement remedy should be evaluated to integrate appropriate cellular confinement product(s) and grading, and allow for off-trail runoff infiltration areas to minimize the amount of water carried to the base of the trail.

A number of user-created informal trails traverse the slopes in the eastern half of the Park. Many of the trails appear to begin near the top of slopes and lead to the Park floor. We recommend keeping and improving several of the trails as identified on Diagram 2.2-A and allowing others to revegetate. Those user-created trails recommended for improvement are fairly well established, are located near the tops of slopes, and access portions of the Park not currently served by planned formal or informal trails. Recommended improvements for user-created informal trails to be retained include the addition of cypress or eucalyptus logs or rock borders along the trail down-slope edge, or widening of some of the trails to better define them for Park users. Logs placed along trail edges should be appropriately spaced to allow movement of stormwater off the trail and down the slope.

Approximately 3,000 feet of user-created trails are recommended to be closed. The majority of these trails begin near the tops of slopes and descend at fairly steep angles with significant erosion potential. The construction of fences along the tops of the slopes is recommended to direct Park users onto designated trails and discourage movement of pedestrian traffic across vegetated slopes. Signs identifying trails or areas being revegetated are also recommended. If, after a season or two, some of the trails have not naturally revegetated, scarification and seeding or planting of the trail surface should be evaluated.

Overview of Slope Issues

Slopes surround the Park on all four sides. Slopes range in height from 35 to 80 feet and are generally at a 1V:1H to 2V:1H slope. The slopes surrounding the Park are generally in good condition with competent vegetative cover. Existing issues in limited areas include slopes bare of vegetation, the presence of gullies, limited slope failure exposing one building footing, and tree root exposure along slope edges.

Two primary areas have slopes bare of erosion-reducing vegetation: (1) the slope immediately north of the Concert Meadow, and (2) the top of slope south of Pine Lake where it meets the adjoining property (see Diagram 2.2-A). The Concert Meadow slope damage appears to be the result of over-use by concertgoers for informal seating and meadow access despite the presence of numerous trails traversing the slope. The slope south of Pine Lake was reportedly exposed as a result of leaking utility lines. Stormwater from between the two homes above the site may also be a contributing factor. The homeowner apparently covered the exposed soil with plastic sheeting that has since worn away. There is potential for significant erosion at this site.

The problem gully, located on the slope north of the Pine Lake Field House, begins near the top of the slope and continues to the toe. The gully, ranging from approximately 2 to 10 feet wide and approximately 1 to 3 feet deep, was created by a leaking sewer line near the top of the slope.

The slope failure is located behind the Wawona Area Garage. The slope failed, exposing an area of bare soil approximately 15 feet wide and 50 feet downslope, and exposing one building footing. Mitigative measures have been implemented including the installation of several short log fences and the placement of straw bales. Additional action is required to prevent additional slope movement and erosion.

Two areas have significant root exposure: one adjacent to the trail along the north side of Pine Lake, and a second along the east side of the Park entrance road at Crestlake Boulevard and Vale Avenue.

All of these sites have been identified as focus areas and are discussed in detail in the Focus Areas portion of this section. This subsection describes general slope improvements and discusses their applicability, strengths, and limitations (Table 2.2.2).

Slope Remediation Recommendations

A number of remedies were identified and evaluated for use on the Park slopes. All recommendations are general in nature and should be further investigated by a qualified professional prior to implementation. The following table identifies the various remedies, the intended application, and benefits and limitations.

Table 2.2.2 – Summary of Potential Slope Remedies

Remedy	Application	Benefits	Limitations
Seeding	• Bare or minimally vegetated slopes	• Effective long-term soil stabilization	• Success depends on choosing appropriate plant species and timing • Fertilizer requirements may be storm water pollution issue • May require irrigation
Mulching	• Bare or minimally vegetated slopes	• Relatively easy to place • Can be used in dense tree areas	• Binders may be required in steep areas • Generally a temporary remedy • Requires periodic reapplication and maintenance • May delay germination of some seeds
Erosion Control Mats (Diagram 2.2-F)	• Bare or minimally vegetated slopes • Slope failure locations	• Available in both organic and/or synthetic materials for short or long-term slope stabilization • Provides immediate erosion protection of exposed soil • Can serve as a visual deterrent to pedestrian traffic	• May delay seed germination • Can be relatively costly • May require experienced contractor to ensure proper installation
Retaining Wall	• Exposed tree root locations on slopes	• Walls can be constructed to follow existing slope contours • Natural, organic appearance • Can limit movement of soil down slope • Can reduce runoff velocity • Voids between interlocking block-type wall blocks allow growth of vegetation	• May encroach onto existing adjacent trails or roads if higher than about 4 feet

Remedy	Application	Benefits	Limitations
Natural Stone Retaining Wall (Diagram 2.2-G)	• Exposed tree root locations adjacent to pedestrian paths	• Preserves rustic nature of Park • May be constructed to follow existing slope contours • Can limit movement of soil across trails • Match existing Park walls	• May encroach onto existing adjacent trails or roads • May not provide the same level of slope support as engineered block walls
Compacted Soil	• Existing gully	• Heals gully • Slope can subsequently be revegetated	• Timely revegetation required to avoid erosion of newly placed soil

Vegetation is generally accepted as the most effective long-term means of controlling erosion of soil slopes. Vegetative groundcover slows the velocity and erosive energy of runoff, allowing infiltration to occur, filtering sediments, holding soil particles in place and helping maintain the infiltration capacity of the soil. Seeding and/or planting with subsequent placement of mulch or mats is recommended for all problem slope areas in the Park. Successful establishment of groundcover can be relatively simple but requires the correct choice of seeds or plants and proper installation/application and timing.

A number of mulches and mats are available for erosion control. Organic mulches including straw, wood chips, and bark or other wood fibers have been found to be the more effective than inorganic mulches for use in seeding applications. Mulches can be applied by hand or machine depending on the location, access restrictions and the size of the area to be covered. Binders or netting to hold the mulch in place may be required for steep areas or if wind and runoff is a problem. Mulched areas should be inspected regularly and after rain for damage, displacement or deterioration. Mulch alone can provide temporary erosion control of exposed soil but should not be used for long-term or permanent erosion control.

An alternative to mulch is fiber, synthetic or composite erosion control mats. Used in conjunction with seeding, the mats keep the seeds in contact with the soil and provide protection until vegetation is established. Organic mats, generally made of jute or straw, provide temporary protection, generally lasting 3 to 4 months. Mats including synthetic, ultraviolet-resistant layers can provide longer-term stabilization of slopes, allowing seedlings sufficient time to become established. See E, General Erosion Control Measures, for more detailed discussions of mats and mulches. The installation of mats by a qualified professional is recommended to ensure soil stabilization and erosion protection.

Slopes where gullies have already formed should receive some treatment before being seeded or planted. After confirming that the cause of existing slope failures has been repaired, the placement of compacted soil or straw is recommended. The gullies should be cleared of plant debris and other materials down to a stable surface and filled to grade with clean compacted fill over a partial layer or strips of drain fabric. Water moving up through the soil from below will be intercepted by the drain fabric and move down slope through the fabric, minimizing any slope slip potential. Once filled, the soil surface should be immediately seeded and covered with a mat or mulch to establish ground cover.

Slope failures located where the Park abuts private residences at the tops of slopes are recommended to undergo further investigation. Please see B, Focus Areas, for recommendations for the exposed footing at the Wawona Area Garage slope.

Slopes with exposed tree roots may require some physical remediation prior to being seeded or planted. Please see B, Focus Areas for recommendations specific to the slope east of the Crestlake Drive and Vale Avenue Park entrance road with exposed roots.

B. Focus Areas

A number of areas around the Park were identified as needing site-specific investigation and remedy recommendations. These focus areas are (1) the Park meadows areas, (2) the toe of the slope north of Pine Lake, (3) the eroded slope directly behind the Wawona Area Garage, (4) the slope at the Crestlake Drive and Vale Avenue park entrance, (5) the slope north of the Concert Meadow, and (6) Pine Lake slope erosion areas along the Park property line (see Diagram 2.2-A for site locations).

1. Meadow Areas Overview

The primary meadows in the Park floor are the large Pine Lake Meadow largely used by dog owners and as overflow parking during events, the Concert Meadow used by concert-goers in the summer, and the East and West Meadows used as picnic and family recreation areas. These meadows have areas of exposed sand surfaces with minimal or no grass coverage and several depressed areas prone to standing water (Figure 2.2-H). The primary causes of the bare spots are the relatively thin layer of topsoil, heavy usage, and vehicle parking.

Meadow Areas Recommendations

As part of the Park improvement, the following actions are recommended at the meadow focus areas: (1) filling and grading meadow areas prone to standing water, (2) application of topsoil where not present, (3) improving surface vegetation coverage, and (4) improving the ground cover to improve ability to support overflow parking while minimizing resultant soil disturbance and associated erosion. If meadow areas continue to exhibit soft soil conditions, use of sub-drains to reduce saturation may also be advisable.

2. Toe of Pine Lake Slope Overview

The toe of the slope north of Pine Lake is significantly eroded where it meets the lake trail. Much of the lower slope is bare of vegetative cover, with tree roots exposed along the pathway (Figure 2.2-I). There is a difference in elevation of approximately 2.5 feet between the trail and the toe of the adjoining slope. Soil, silt, and sand are currently being washed down the slope across the trail and into the lake. Trees near the toe of the slope are susceptible to root exposure and reduced stability, and may ultimately topple.

Toe of Pine Lake Slope Recommendations

A number of vegetative and physical remedies identified in Tables 2.2.1 and 2.2.2 were evaluated for use at this site.

While vegetative measures can address the movement of soil down the slope and into the Lake, they will not provide significant improvement for trees with exposed roots.

To address this issue, natural stone retaining walls can be constructed to provide support for the trees along the toe of the slope as well as limit movement of soil across the trail and into the lake.

Construction of a retaining wall to a maximum height of approximately 4 feet along the approximately 300 feet of trail where tree roots are exposed is recommended. The wall will act to prevent further erosion of the soil along the northern edge of the trail and provide protection of the exposed tree roots. The wall can be constructed of natural stone to match the existing Park walls (Diagram 2.2-G). Since a retaining wall may extend onto the trail, encroaching as much as two feet onto the existing trail in areas with exposed tree roots at the toe edge, the implementation of a

retaining wall needs to be carefully planned to maintain sufficient space for vehicle access if required.

3. Wawona Area Garage Overview

The slope immediately south of the Wawona Area Garage has failed in the past, exposing one footing of the building and creating a gully (Figure 2.2-J). The failure is reported to be the result of a leaking utility line located behind the building. It is assumed the leaking utility line has been repaired. Temporary measures including the installation of several small-log fences or barriers and the placement of straw bales downslope of the building are in-place. It is unclear whether these temporary measures have sufficiently stabilized the soil slope. Removal of the building is planned to occur as part of the Park improvement.

Wawona Area Garage Recommendations

The following measures were evaluated for this site:

- Verifying the storm drain line behind the building has been properly repaired;
- Adding asphalt curbs at the edge of the pavement adjacent to the building to direct runoff away from the structure and exposed soil;
- Terracing or stepping the slope south of the building;
- Placing of riprap on the slope;
- Filling the gully with compacted straw or soil; and
- Seeding and mulching the exposed soil.

None of the possible remedies, however, will provide long-term slope stabilization in the area if the leaking utility line is not properly repaired.

The addition of curbs or other surface drainage features alone will not address the slope failure but will help keep future runoff from adversely impacting the final remedy and are recommended as part of the improvements planned for the area. Terracing is generally a suitable remedy for reducing runoff velocity and increasing infiltration on steep slopes but may not be appropriate for this location because of limited space. Filling the gully with compacted straw, soil or riprap are also suitable remedies for this site and should be re-evaluated once the building is removed.

The exposed soil has largely revegetated on it owns since the failure. We therefore recommend the placement of plastic sheeting, mulch or erosion control mats on the exposed soil at the foot of the slope to control erosion until the building is removed. Once the building is gone, the temporary fences and straw should be removed to expose stable ground. The slope should then be re-evaluated for either terracing or filling with compacted soil and subsequent revegetation.

4. Crestlake Drive-Vale Avenue Entrance Overview

The slope immediately east of the road at the Crestlake Drive and Vale Avenue Park entrance has areas with minimal vegetative groundcover and exposed tree roots at various slope elevations above the Park entrance road (Figure 2.2-K). Much of the slope is covered with ivy. There are two informal trails at the site, one along the top of the slope and a second running from the top to the toe of the slope.

Crestlake Drive-Vale Avenue Entrance Recommendations

The following vegetative and non-vegetative measures were evaluated for use at this site:

- Seeding the slope;
- Installing mulch or fiber mats on the bare areas;
- Placing watties horizontally across the slope face;
- Placing riprap at exposed root locations;
- Stepping or terracing the slope face;
- Installing retaining walls at exposed root locations;
- Removing trees; and
- Constructing a diversion ditch or swale to intercept and carry runoff down the slope face.

Seeding and/or covering portions of the slope with mats or mulch will address the bare areas and limit future erosion but will not provide significant coverage of or support to the already exposed tree roots.

The exposed roots present a problem that mulching and revegetation alone cannot address. The construction of a gravity wall in conjunction with seeding, mulching or matting is therefore recommended for this site. Gravity walls can be constructed to look very natural in the Park setting. Individual or interlocking block walls allow the wall to slope back from the road and rise or fall in height depending on the needs of the site while providing open spaces between the blocks for growth of vegetation and movement of water. Soldier-pile walls can also be constructed with a sculptured art rock face to provide slope stability with a natural rock appearance. Because some of the exposed roots appear as high as approximately 20 feet above and 10 feet back from the park roadway, a tiered retaining wall is recommended. The tiered approach will allow for revegetation of the soil between the two tiers, providing additional erosion protection and a natural appearance. Gravity walls taller than 4 feet can encroach as much as 3 feet into the slope, limiting their application where tree roots are exposed at higher slope elevations. This site may therefore require some limited tree removal for long-term stabilization. Additional evaluation of this site by a tree professional is recommended before any erosion control measures are implemented, and the exact retaining wall type should be carefully considered due to the visual prominence of this location.

5. Concert Slope Overview

The slope north of the Concert Meadow is traversed by a number of informal trails and is used by many concertgoers for informal seating. The lower portion of the slope is densely covered with trees but suffers from minimal vegetative groundcover (Figure 2.2-L). Logs have been placed across the slope at various elevations to limit movement of the soil. If this problem is not addressed, there is potential for erosion of the slope due to storm runoff.

Concert Slope Recommendations

This site is ideal for a combination of seeding, planting, mulching, or mats placed to prevent additional erosion and revegetate the slope. Because of the numerous trails and trees on the lower half of the slope, effective installation of mats in the area may be difficult and labor intensive. The use of more pliable jute-type mats or mulch is therefore recommended for this location.

The installation of signs, temporary fences, and/or log-type "physical barrier" features to reduce attractiveness of off-trail foot traffic is also recommended for the slope to keep concertgoers off the slope and on the trails.

6. Pine Lake Slopes Overview

The eroded slopes north of the Field House and south of Pine Lake are notably bare of vegetation (Figures 2.2-M and 2.2-N). The northern slope reportedly failed in response to a leaking utility pipe and its subsequent repair. The slope failure and resulting gully begin near the top of the slope at the pipe location and continue down to the toe of the slope. The gully ranges from approximately 2 feet to 10 feet wide and from 1 foot to approximately 3 feet deep. Tree roots have been exposed by the erosion and traverse the gully along its length. Much of the gully has naturally filled with plant debris since it was created. If not addressed, the gully is expected to increase in size as additional soil is washed away.

The slope failure south of Pine Lake begins at the top of the slope where the Park abuts a residence. The failure appears to have exposed a footing of the home. Plastic sheeting was installed over the bare soil but has since worn away. The primary effect of the erosion appears to be exposed soil that is minimally revegetating on its own. There is the potential for significant erosion and/or additional slope failure at this site.

Pine Lake Slopes Recommendation

The following remediation measures for the Pine Lake slopes were investigated:

- Placement of a perforated pipe along the alignment of the gully;
- Filling of the gully with compacted straw or soil or riprap; and

- Seeding, mulching, and/or mats at exposed soil locations.

It is essential that the cause of the erosion be identified and addressed for each site before any additional long-term erosion measures are implemented. Installation of a perforated pipe may not be appropriate for the gully. The gully has several level sections where water running down the pipe could collect and impact the remedy. Removal of the plant debris and filling of the gully with compacted soil over strips of drain fabric is therefore recommended for this site. Once filled, the site should be seeded and covered with mulch or mats.

The slope south of Pine Lake is already revegetating where the plastic sheeting has worn away. The erosion at the site does not appear to have created a gully or depression running down the slope. This site may therefore require only revegetation once the source of the erosion is eliminated. If addressing the source of the erosion is intrusive, additional study and evaluation of the site and mitigative measures is recommended.

C. Surface Drainage

Surface Drainage Overview

As part of the evaluation of the erosion conditions at the Park, a simple confirmation-level analysis of the storm runoff conditions was performed. As part of this Park surface drainage analysis, existing drainage patterns, relative flow rates and stormwater utilities were evaluated and related to observed areas of Park erosion.

The existing surface drainage patterns were evaluated by evaluating general topography, identifying runoff affecting features and dividing the Park into drainage sub-basins. Sub-basins were identified assuming that surface water runoff generated from slopes is intercepted by the down-slope trails and then flows along the trails to a sub-basin discharge point (see Diagram 2.2-O). Based on the sub-basin areas, flow rates were calculated using the Rational Method and an assumed rainfall intensity of 2.5 inches / hour. This value was chosen to represent a significant storm event that would be expected to produce conditions where erosion would likely occur.

Diagram 2.2-O illustrates the existing surface drainage patterns and drainage sub-basins that have been identified at the Park. The diagram also illustrates locations of identified focus areas that have had significant erosion in the past. The focus areas have been included to assist in evaluating the relationship between surface water drainage and erosion. Table 2.2.3 summarizes the estimated flow rates for each sub-basin. These values were used to evaluate remedial measures for the slopes, trails and meadows throughout the park.

Stormwater maps obtained from the City of San Francisco Department of Public Works (SFDPW) were reviewed. These maps indicated a number of sub-drainage improvement projects were planned for the park in the 1950s. From our review it appears these projects were intended to direct surface water from the easternmost portion of the site towards the Fish Pond. Diagram 2.2-P shows the alignment of the various catch basins and conveyance systems identified on the City drawings. It is unclear to what extent these sub-drainage improvement projects were completed.

Sewer maps provided by the SFDPW were also reviewed. Our review indicated the existence of a sewer overflow line that appears to drain into Pine Lake. Assuming this infrastructure is still operational, it may affect the water quality of the lake.

Table 2.2.3 – Sub-Basin Flow Rates[1]

Sub-Basin	Flow Rate (cu. ft/sec)	Sub-Basin	Flow Rate (cu.ft/sec)
Q1[2]	2.7	Q11	2.1
Q2	2.6	Q12	1.3
Q3	2.1	Q13	0.9
Q4	2.1	Q14	1.6
Q5	3.1	Q15	1.4
Q6	1.7	Q16[4]	4.6
Q7	1.5	Q17[5]	24.1
Q8	0.7	Q18	1.2
Q9	0.9	Q19	1.4
Q10[3]	17.4	Q20	0.8
		Q21	3.6

Notes: (1) These flow rates are not intended to be a complete representation of the runoff conditions that could occur at the park. A detailed design of remedial measures should be based on an area- specific evaluation of runoff conditions for an appropriate return frequency storm event.
(2) Sub-basin assumes that catch basins do not capture any surface water.
(3) Flow rate includes the flows from Q1 through Q9.
(4) Flow rate includes the flows from Q12 and Q15.
(5) Flow rate includes the flows from Q10, Q11, Q13, and Q14.

Observed Erosion Due to Surface Drainage

The existing surface drainage patterns were reviewed in relation to areas where significant erosion has occurred (i.e., focus areas) to evaluate the relationship between surface water drainage and erosion. The following observations were noted:

- Apart from the Wawona Area Garage Focus Area, there appear to be relatively minor erosion issues as a result of surface drainage in the eastern portion of the site. This is primarily due to the existence of relatively thick vegetation on the slopes and/or the possible positive contribution of existing sub-drainage systems as previously discussed (Diagram 2.2-P).
- A number of identified areas of erosion can be attributed to one-time occurrences resulting in a sudden loss of vegetation and/or soil. Examples of this condition include:

1. Wawona Area Garage Focus Area – according to discussions with employees from Stern Grove, a corrugated metal drainage pipe that runs adjacent to the southern end of the garage failed due to corrosion effects. A significant storm event apparently occurred in the mid-1990s, resulting in a large discharge of stormwater from this pipe to the area down-slope of the storage shed.
2. Pine Lake Slopes Focus Area – according to discussions with Dennis O'Rourke, the slope north of the Field House failed in response to a leaking utility pipe and its subsequent repair (see

Focus Areas-Pine Lake Slope Overview).

3. Slope South of Pine Lake – a localized slope failure occurred at the base of a retaining structure adjacent to a residential dwelling near the top of the slope. In addition, minor erosion appears in a number of areas south of Pine Lake, typically due to maintenance work previously performed on sewer lines located midway up the slopes.

- Erosion in the vicinity of the Crestlake-Vale Focus Area appears to be a direct result of surface drainage in the area. High surface water velocities are seen to be a contributing factor to past erosion due to the steep slopes and minimal vegetative cover in the area.
- Informal trails predominantly in the vicinity of the Concert Slope Focus Area, and to a lesser extent the slopes south of the Concert Meadow, are prone to erosion from excessive velocities due to erodable surfaces and limited storm runoff carrying capacity of the trails.
- A significant amount of flow is expected to run from the Concert and West Meadows towards the Pine Lake Meadow. These flows are likely to cause erosion of the meadows as indicated by the accumulation of sediment on the adjoining trails.

Surface Drainage Recommendations

Based on our evaluation of erosion caused by the effects of surface drainage, a number of remediation measures can be employed around the Park to improve the conveyance and collection of surface water, as well as general measures to minimize the likelihood of erosion in the future. These measures are summarized below.

- Investigate the current storm drainage systems to evaluate their functionality. Maintenance including, but not limited to, cleaning out existing catch basins and drainage ditches will enhance system capacity and act to minimize surface water erosion on the east portion of the site.
- Assuming the storm drainage system(s) exist, evaluate construction of a swale linking the north and south ends of the macadam trail running adjacent to 19th Avenue (Diagram 2.2-E). This swale could tie into the existing catch basins and flow towards the Fish Pond (as suggested by the 1950s DPW drawings).
- Perform localized grading of the higher elevation areas near Wawona and 19th Avenue portion of the site to assist in directing the maximum amount of surface drainage towards the catch basins in that area. This runoff would then flow towards the Fish Pond and be directed to the natural drainage channel, the Pine Lake Parking Lot, and potentially towards Pine Lake.
- Evaluate use of pervious concrete in the new parking area to enhance infiltration of run-off. Additionally, consider using pervious concrete in the construction of the Pine Lake Meadow ADA path.
- Construct a swale through Pine Lake Meadow to assist in the collection of surface water from the West and Pine Lake Meadows and direct this surface water (and sediments) towards a new sedimentation basin located upstream of Pine Lake (Diagrams 2.2-E and 2.2-Q).
- Grade the West and Pine Lake Meadows to direct surface water towards existing and planned swales (Diagram 2.2-E).
- Better delineate and increase the capacity of the existing natural drainage channel running west from the Fish Pond (Diagram 2.2-O). The capacity will depend on expected increased flows from the Fish Pond as referenced above. Based on increased capacity requirements, the channel may need lining to prevent scour.
- Investigate the condition of the existing swales located adjacent to the rock walls and trails on the northern hillside and their ability to convey storm drainage.

D. Park Use Patterns and Recommendations

Overview

The use patterns in the Park vary significantly depending on location and time of year. The most regularly and heavily used area of the park appears to be the Pine Lake Meadow. The area is frequented by dog owners year round and is used for overflow parking during events. Some of the least used features of the park are some of the informal slope trails surrounding the eastern half of the park. These appear to be used mostly by summer concertgoers to reach the Concert Meadow.

The Park appears to be in generally good condition with sufficient size and facilities to support its users. The number of user-created informal trails in the eastern portion of the Park, however, and their potential for erosion are problems. Most of the user-created trails fall into three general categories: (1) those connecting the top of the slope near the 19th Avenue and Sloat Boulevard Park entrance with the East Meadow, (2) others leading from the top of the slope along Sloat Boulevard to the Concert Meadow and (3) trails connecting the slope north of the concert area to Dog Walking Meadow along Wawona Street.

Recommendations

Based on our review and evaluation of the Park use patterns and features, erosion potential of the trail and slope soils, and our understanding of future Park improvements, we propose the following:

- Formalize the Concert Meadow seating area to reduce traffic on and use of the slope north of the Concert Meadow for informal seating
- Include features in and adjacent to the "formalized" informal seating areas proposed for the sloped areas to enhance use of the trails and reduce attractiveness to off-trail foot traffic
- Install signage to involve and educate Park users with the Park improvements and erosion control measures;
- Add fences to prevent foot traffic from accessing user-created trails traversing the slopes;
- Consider constructing additional walls to better identify trails;
- Investigate the addition of new trails to more easily access certain areas; and
- Construct an erosion information display.

E. General Erosion Control Measures

Planting and Vegetation

Vegetation is generally accepted as the most effective long-term means of controlling erosion. Vegetative groundcover slows the velocity and erosive energy of runoff, allowing infiltration to occur, filtering sediments, holding soil particles in place and helping maintain the infiltration capacity of the soil. Successful establishment of vegetation can be relatively simple but requires careful consideration of the type of vegetation, site and seedbed preparation, planting time, fertilization and water requirements.

Vegetation is generally divided into grasses, trees and shrubs, and vines and groundcover. Because most of the Park erosion problem areas are already populated with trees, a mix of grasses, vines, and groundcover is recommended. Grasses, depending on the type, typically provide long-term soil stabilization with minimal maintenance requirements. Although grasses provide quick germination and rapid growth, they also have a shallow root system and are not as effective in stabilizing deep soils as trees, shrubs, and deep rooted groundcovers. A qualified plant materials specialist should be consulted to choose a specific seed mix for the Park.

Vines and groundcovers can spread quickly, stabilizing large areas while requiring minimal maintenance. Care should be taken to choose species that will not adversely impact native plant species or existing trees.

Once the choice of plant species appropriate for the Park is made, the seeds must be applied to the exposed soil and be kept in contact with the soil long enough to establish plants of a size

sufficient to resist storm events. Mulch or erosion control mats are generally used to keep the seeds in place, provide temporary stabilization of the exposed soil, and foster growth of new seedlings.

Organic mulches including straw, wood chips, and bark or other wood fibers have been found to be the more effective than inorganic mulches for use in seeding applications. Mulches can be applied by hand or machine depending on the location, access restrictions and the size of the area to be covered. The use of binders or netting to hold the mulch in place may be required for steep areas or if wind and runoff is a problem. Mulched areas should be inspected regularly and after rain for damage, displacement, or deterioration. The use of mulch alone can provide temporary erosion control of exposed soil, but should not be used for long-term or permanent erosion control.

An alternative to mulch is the use of fiber or synthetic mats. Mats are typically suited for stabilization of erosive soil on steep slopes or channels. Used in conjunction with seeding, the mats keep the seeds in contacts with the soil and provide protection until vegetation is established. Organic mats, generally made of jute or straw, provide only temporary protection and last on the order of 3 to 6 months. Mats including synthetic, ultraviolet resistant layers will provide longer-term stabilization of slopes, allowing seedlings sufficient time to become established. The installation of mats by a qualified professional is recommended to ensure effective soil stabilization and erosion protection.

Non-Vegetative Methods

A number of non-vegetative means are available for use in controlling and limiting erosion. There are both short-term, temporary solutions as well as long-term solutions. The most common short-term means of controlling erosion is plastic sheeting. Plastic sheeting can be used to cover exposed soil surfaces prone to runoff erosion while long-term remediation measures are evaluated and implemented. Chemical stabilizers or binders can also be used to provide temporary soil stabilization. Materials made of vinyl, asphalt, or rubber are sprayed onto the surface of exposed soils to hold the soil in place and protect against erosion. Binders are fairly easy to apply and can be effective immediate protection. Binders, most commonly used for areas that cannot be vegetated, tend to be more expensive than vegetative practices.

The use of wattles, straw bales, and silt fences are also effective erosion control products recommended for temporary use at exposed soil locations. Wattles and straw bales are relatively inexpensive, readily accessible and generally much easier to install than silt fences. Areas that may have significant soil exposure as a result of the overall Park improvement should be evaluated for use of one or more of these products during construction.

The installation of signs, fences and/or informational displays can be effective at controlling the erosional impacts caused by humans. Fences installed along specific areas at the tops of the slopes could aid in reducing the amount of foot traffic entering or exiting the Park on user-created trails.

F. Erosion Control Implementation Plan

A number of potential remedies have been recommended for various Park trail and slope locations. Careful prioritization or sequencing of the remedies can potentially (1) impact future erosion, (2) minimize or eliminate the need for re-application or implementation of various remedies, (3) maximize the effectiveness of some remedies, and (4) help control implementation costs.

Areas or sites recommended for implementation of erosion control remedies have been prioritized based on the observed potential for erosion as follows. Tier I actions are recommended for immediate implementation in areas with significant erosion potential. Tier II remedies are recommended to control future Park erosion but are not judged to be in immediate need of action to prevent slope or trail failure. Tier III improvements are recommended to improve overall site performance but are not currently sources of significant erosion.

Tier I

- Investigate and repair as needed the sewer system located on the western Park slopes;
- Implement remedies at all slope failure locations;
- Build a swale through Pine Lake Meadow;
- Construct a sedimentation basin east of Pine Lake; and
- Investigate and repair as needed the Wawona Meadow area storm drain line.

Tier II

- Vegetate slopes with minimal ground coverage;
- Implement a remedy at the Toe of the Slope North of Pine Lake;
- Make trail improvements;
- Reseed or Improve meadow bare spots; and
- Construct a sedimentation basin west of Pine Lake.

Tier III

- Implement a remedy at the Crestlake and Vale slope; and
- Investigate and repair the corrugated metal drainage pipe located at the eastern end of the Park.

Any slope cleared of vegetation during Park Improvement construction should be immediately stabilized with plastic sheeting, mulch or binders and subsequently revegetated.

Table 2.2.4 – Erosion Control Remedy Estimates

Trail Remedy Estimates			
Remedy	**Assumptions**	**Unit Cost**	**Order of Magnitude Installed Cost**
Initial clearing and repair of existing swales adjacent to rock walls (Diagram 2.2-B)	• Will be implemented at all existing locations • 4,000 linear feet of existing swales – all require cleaning and 25% require limited repair • 50 feet/hour to clear and repair • No material costs included	• $1 – $2/foot of wall	• $4,000 – $8,000
Construct new swales adjacent to trails	• Assume 3,000 feet of new, un-reinforced, cast-in-place concrete swales	• $10 – $30/linear foot (lf) based on difficult access and narrow work areas	• $30,000 – $90,000
Construct natural stone wall on trail north of Pine Lake	• 300 feet of wall to be constructed	• $250 – $300/lf	• $75,000 – $100,000
Improve surface of informal trail w/ flexible cellular confinement (Diagrams 2.2-B and 2.2-C)	• Assume 2,000 feet of 4' wide trails to be improved w/ 3" deep cellular geo product plus filter fabric	• $15 – $25/lf	• $30,000 – $50,000

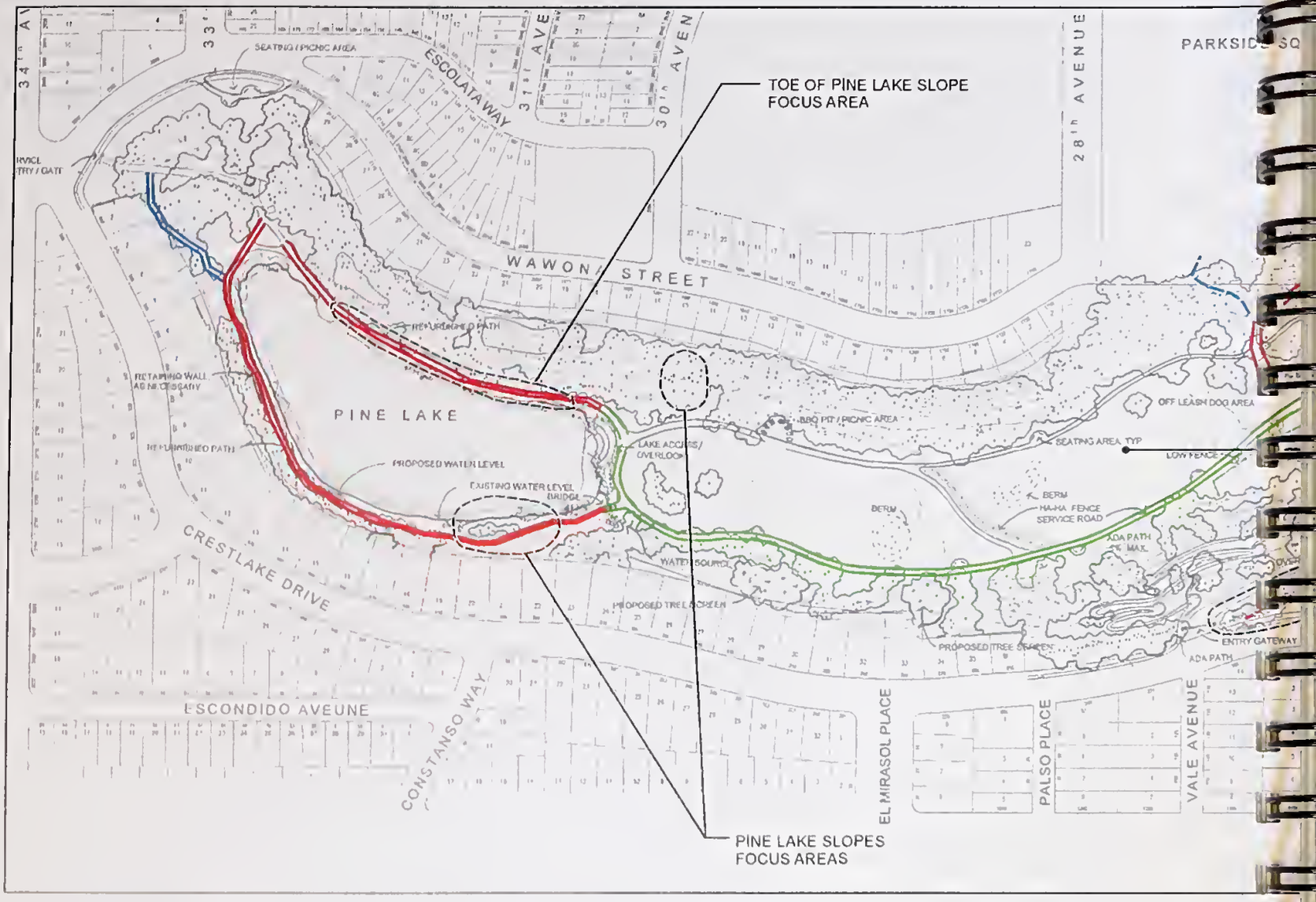
Trail Remedy Estimates			
Remedy	**Assumptions**	**Unit Cost**	**Order of Magnitude Installed Cost**
Improve surface of Pine Lake north trail with cellular confinement (Diagram 2.2-D)	• Assume 500 feet of trail and lake slope to be improved with cellular confinement product • Cellular product includes filter fabric • 500' long × 18' wide × 0.1' deep cellular product over 0.5' of compacted base and filled with coarse backfill	• $60 – $100/lf	• $30,000 – $50,000
Repave formal trails	• Assume 2,000 feet of 6' wide trails and 1,000 feet of 4' wide trails to be re-paved with asphalt	• $2 – $4/square foot including materials and labor	• $32,000 – $64,000
Patch formal trails	• Assume 2" thick hot mix asphalt placed by hand in potholes • Assume 1,000 square feet of trail need patching	• $2 – $4/square foot including materials and labor	• $2,000 – $4,000
Re-vegetation of informal trails	• Assume 50% of approximately 3,000 feet of informal trails recommended for closure require some trail surface scarification and seeding	• $150/100 feet of trail for scarification with hand operated device • $300/acre for seeding by hand	• $5,000 – $10,000
Rock wall repair	• Assume 1,000 feet of wall need repair • All stone on site	• $750 – $1,250/ 100 square feet of wall including mortar and labor	• $22,500 – $37,500

Slope Remedy Estimates			
Remedy	**Assumptions**	**Unit Costs**	**Order of Magnitude Installed Cost**
Seeding	• Total area to be seeded = 6 acre (Slope N of Concert Meadow = 1 acre, Crestlake & Vale slope = .75 acre, slopes north Field House & Pine Lake = 2.5 acre, slope south of Pine Lake = .5 acre)	• $600 – $12,000/acre • including materials, labor and equipment • Maintenance costs are 15 – 20% of initial cost	• $3,500 – $7,000 for initial seeding or hydroseeding
Mulching	• Organic mulch to be placed by hand on slope areas with dense trees where mats aren't an option • Assume 2 acre to be mulched	• Range $1,500 to $7,500/ac for installation and maintenance	• $3,000 – $15,000 per application depending on location and extent of preparation required
Mats (Diagram 2.2-F)	• Assume 2 acre to be covered with temporary, jute type mats and 2 acres to be covered with long-lasting mats w/	• Temporary Mats average $1.50/yd^2 or $7,500/ac installed • Mat w/ synthetic layers average $3.50/yd^2 or $17,000/ac installed	• Temporary Mats = $15,000 – $19,000 • Long-lasting Mats = $35,000 – $43,000
Interlocking Block-Type Retaining Wall	• Assume 1,000 square feet of wall to be constructed on Crestlake-Vale slope	• $20.00/sq ft for walls < 4' tall • $35.00/sq foot for walls > 4' high	• $20,000 – $35,000 for Crestlake-Vale slope
Soldier-Pile-Type Retaining Wall	• Assume 1,000 square feet of wall to be constructed on Crestlake-Vale slope	• $75.00/sq ft for walls • $25.00/sq ft for sculptured art rock facing	• $100,000 – $120,000 for Crestlake-Vale slope

Slope Remedy Estimates			
Remedy	**Assumptions**	**Unit Costs**	**Order of Magnitude Installed Cost**
Riprap	• Assume 50 cy at Wawona Area Garage placed by machine • Assume 100 cy at gully north of Field House • Assume 50 cy at Crestlake and Vale slope at exposed tree root spots • All sites require drain fabric	• $100/cy riprap placed by machine • $3.00/sy drain fabric installed	• $4,000 – $8,000 – Wawona Area Garage • $4,000 – $8,000 – Crestlake and Vale slope
Compacted Soil	• Assume 50 cubic yards (cy) at Wawona Area Garage placed and compacted by hand operated machine • Assume 100 cy at gully north of Field House • All sites include drain fabric	• $30/cy for soil including placement • $4.00/cy to compact • $2.00/sy of installed drain fabric	• $2,000 – $5,000 for Wawona Area Garage • $4,000 – $8,000 for gully north of Field House

Surface Drainage Remedy Estimates			
Remedy	**Assumptions**	**Unit Costs**	**Order of Magnitude Installed Cost**
Investigate condition of existing sub-drainage features as shown on Diagram 2.2-P	• All lines and appurtenances can be easily located and accessed • Approximately 2,500 feet of sub-surface drainage pipes exist	• $50 – $100/100 feet including video	• $1,250 – $2,500
Construct Surface Drainage Swales	• Grass, drainage ditch near 19th Ave is 250 feet long with an average width of 10 feet and 1 foot deep. Excavated soil to be used on site. Ditch to be lined with erosion control mat • Swale to run from Pine Lake Parking Lot to Pine Lake is approximately 1,000 feet long with an average width of 10 feet and 1 foot deep and unlined	• $30 – $75/lf including excavation, surveying, labor, equipment, seeding and mats.	• $7,500 – $15,000 for 19th Avenue swale • $50,000 – $75,000 for swale through Pine Lake Park Meadow
Grading of meadows	• Approximately 8 acres including the Wawona Area, West Meadow and Pine Lake Meadow require surveying, and limited grading	• $2 – $4/cy including surveying and grading	• $15,000 – $30,000 for Wawona Area • $25,000 – $50,000 for Meadows

Notes:
1. All estimates in 2002 dollars
2. Contractor mobilization and de-mobilization costs are not included
3. Costs associated with handling, transportation or disposal of soils generated as part of remedy are not included



LEGEND

FORMAL TRAILS RECOMMENDED FOR IMPROVEMENT

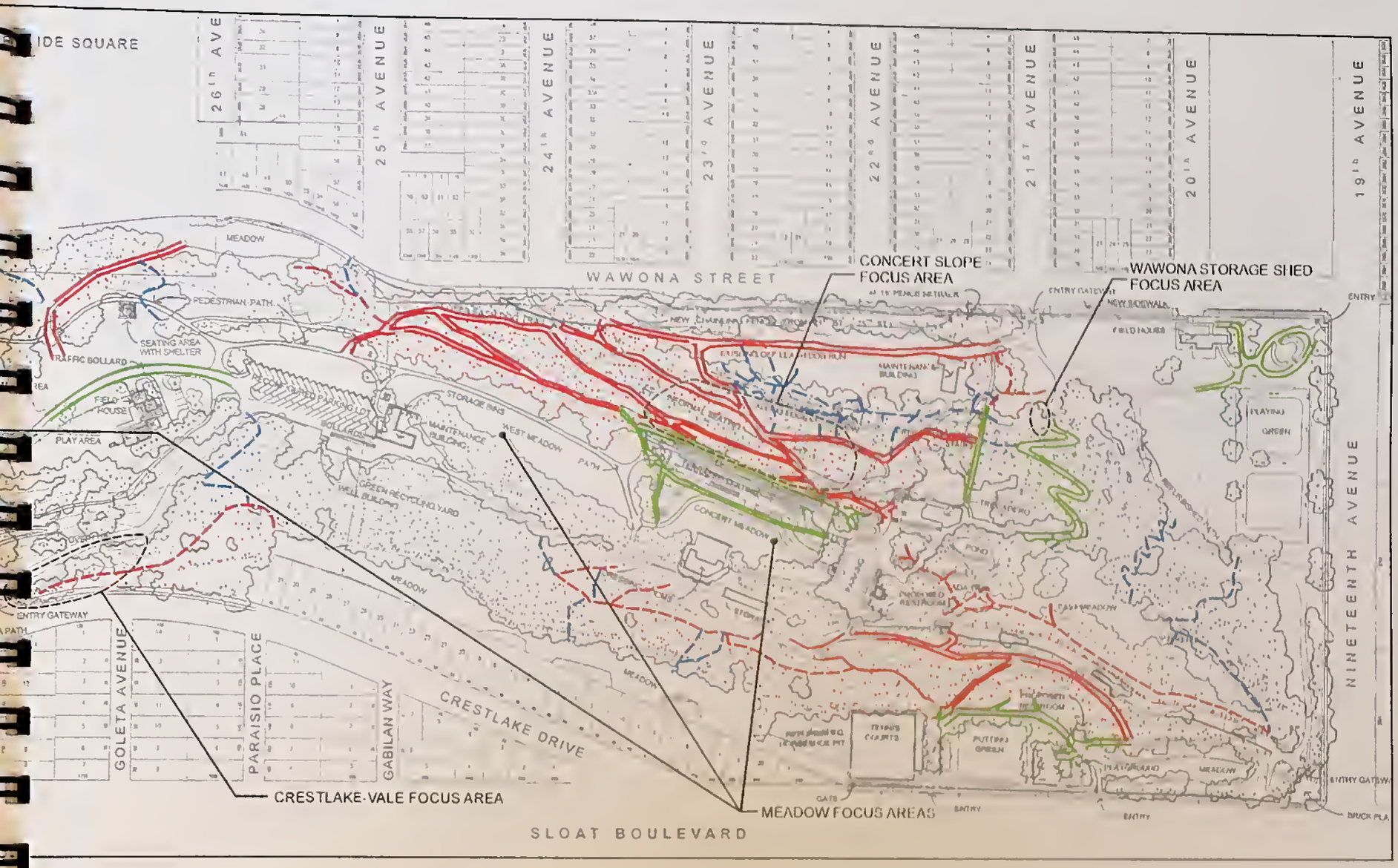
INFORMAL TRAILS RECOMMENDED FOR IMPROVEMENT
(DASHED INDICATES USER-CREATED TRAILS)

INFORMAL TRAILS RECOMMENDED FOR CLOSURE/RE-VEGETATION
(DASHED INDICATES USER-CREATED TRAILS)

250 0 250 500

SCALE IN FEET

N



STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN

Erosion Control Trail and Focus Areas

Diagram 2.2-A

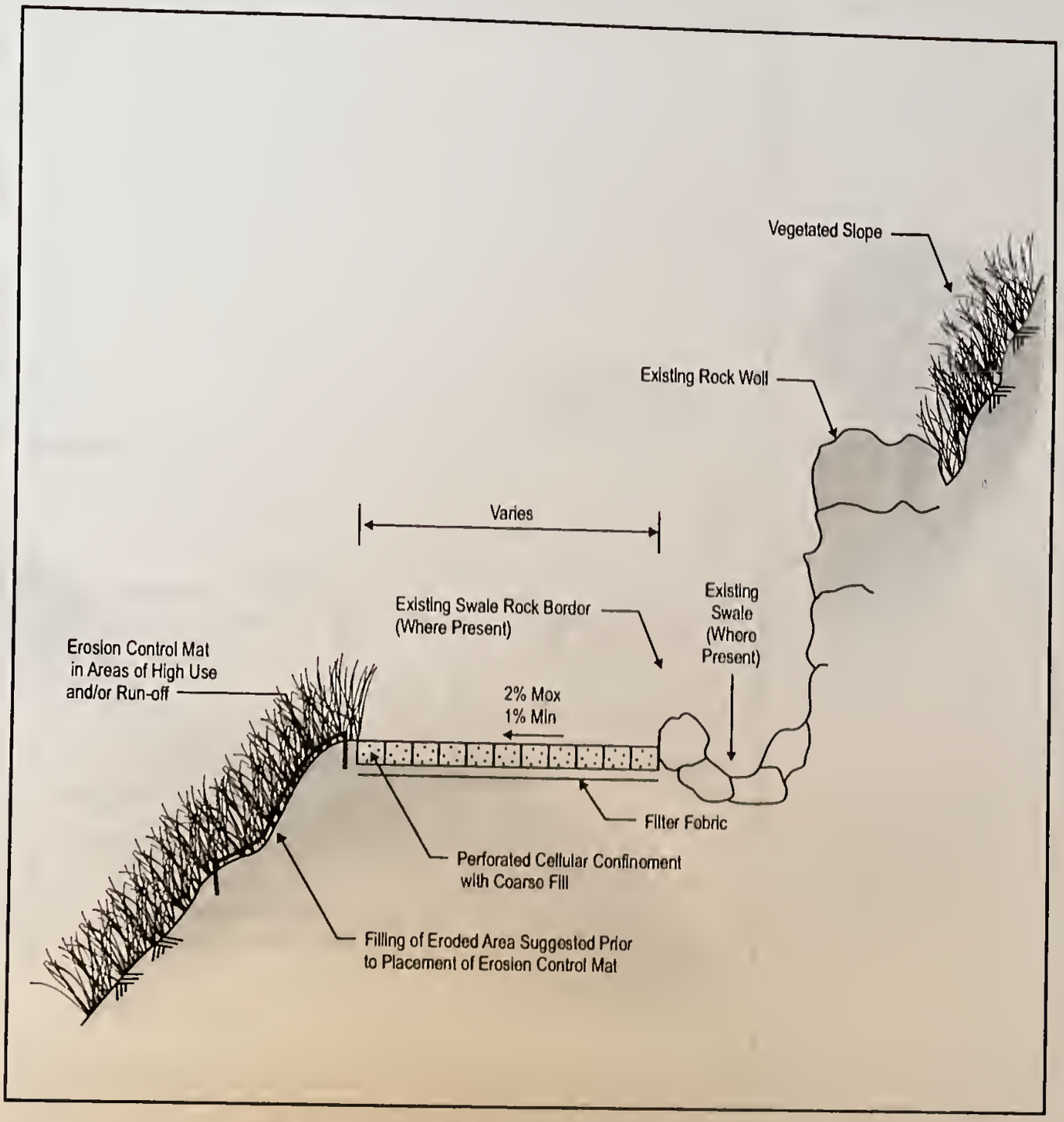


Diagram 2.2-B - Typical section along informal trail with rock wall

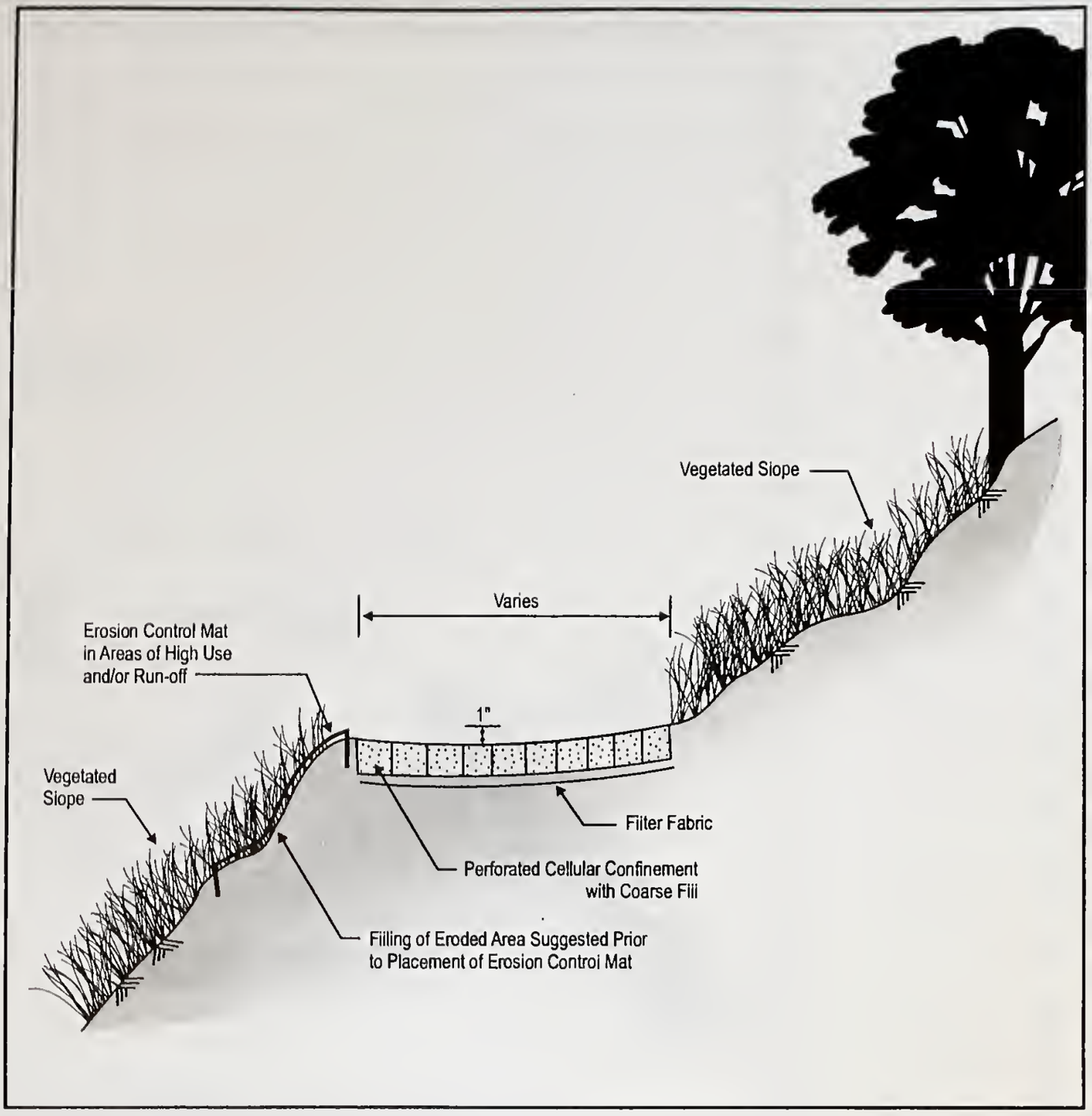
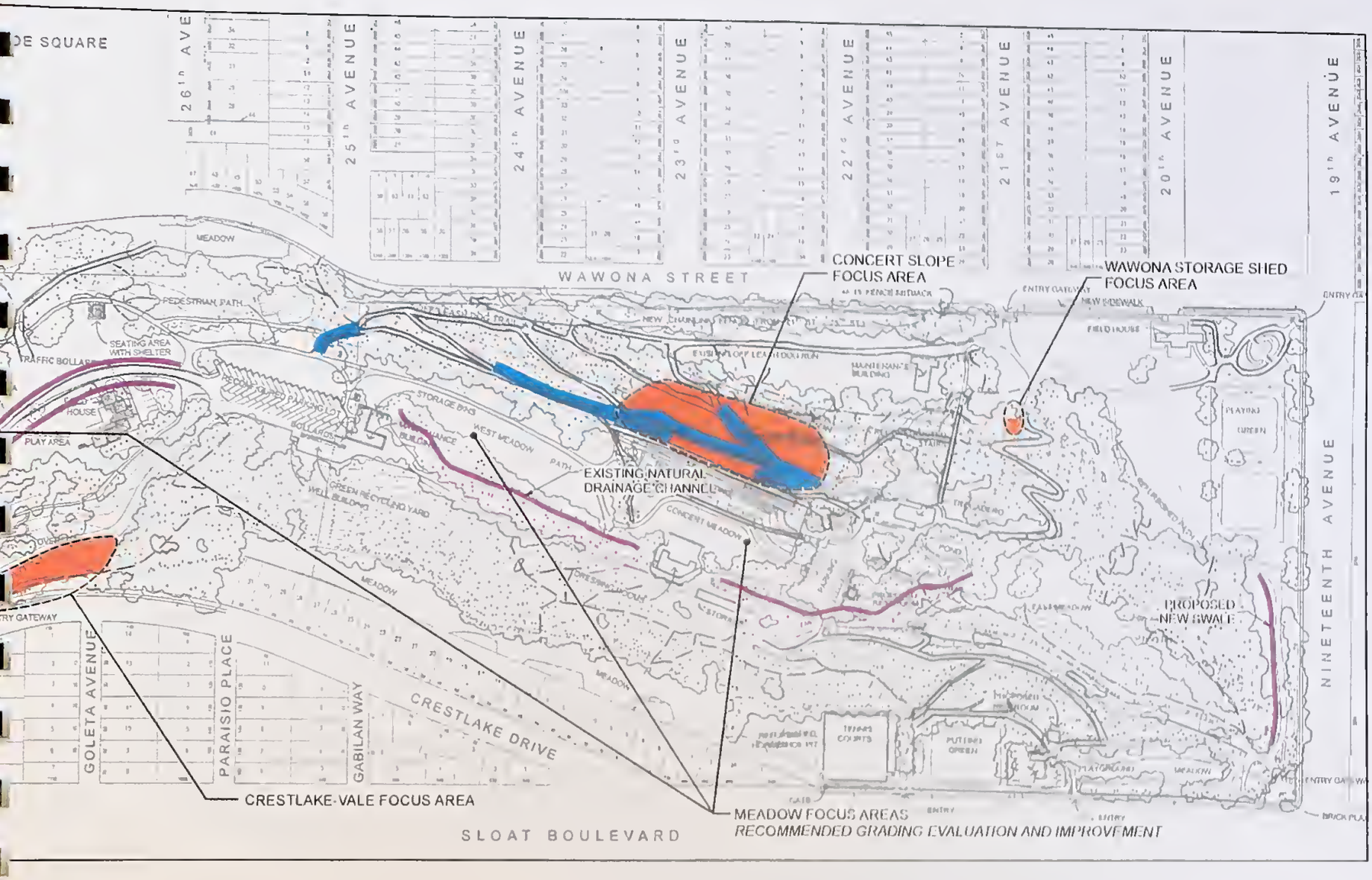


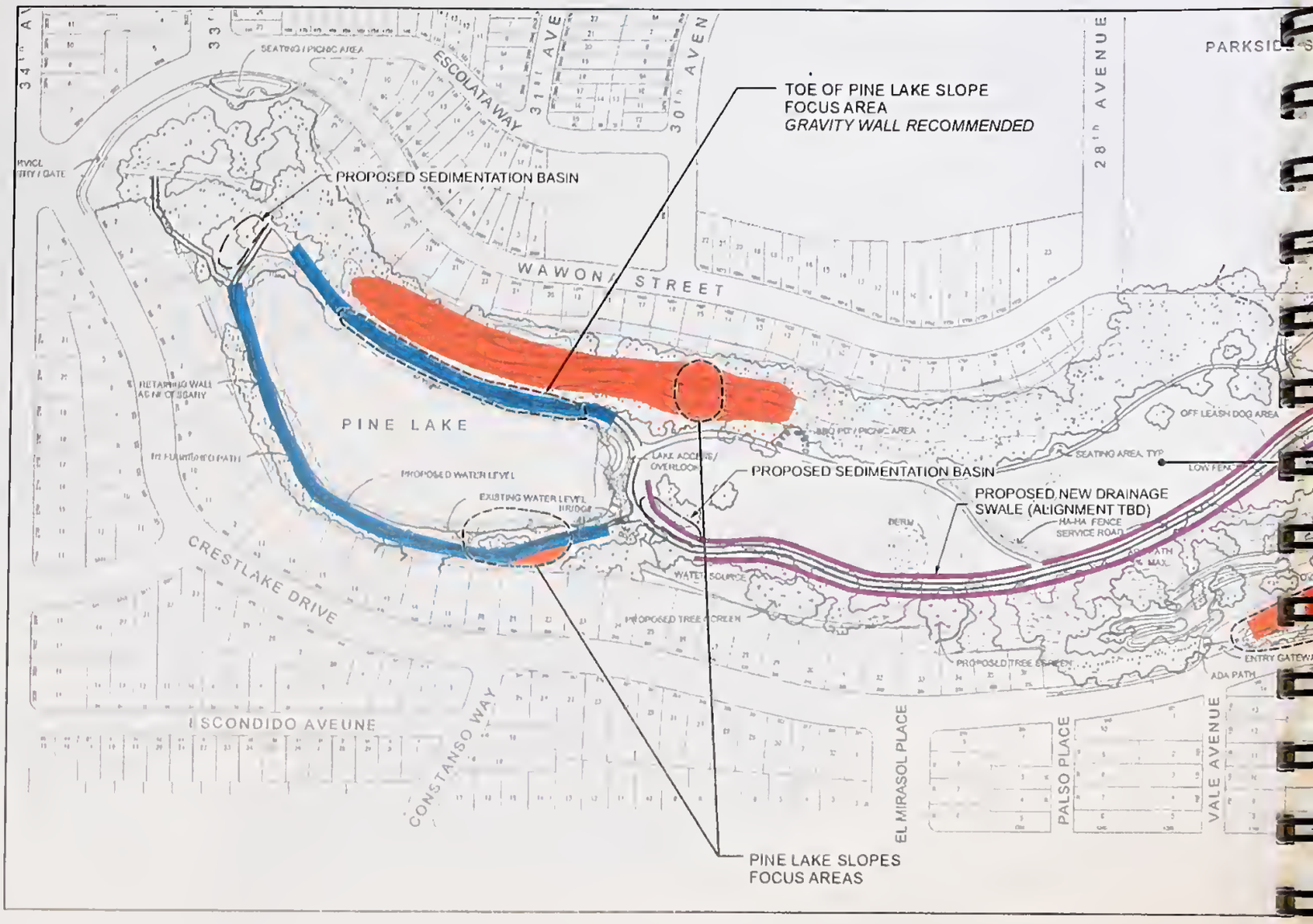
Diagram 2.2-C - Typical informal path section



STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN

Erosion Control Recommendation Locations

Diagram 2.2-E



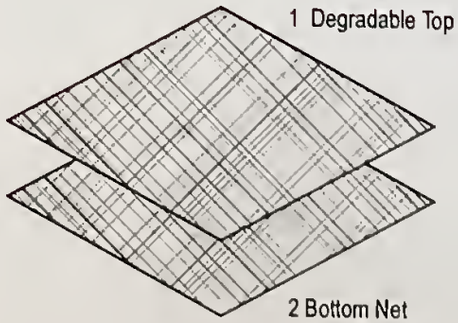
LEGEND

- TRAILS RECOMMENDED FOR FLEXIBLE CELLULAR CONFINEMENT IMPROVEMENT
- AREAS RECOMMENDED FOR RE-VEGETATION
- POTENTIAL DRAINAGE IMPROVEMENT LOCATIONS

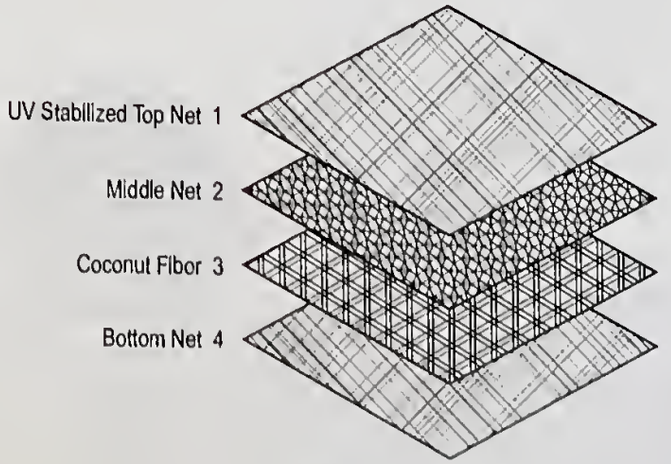
250 0 250 500

SCALE IN FEET

N



Typical Degradable Fiber Mat Detail



Typical Permanent Fiber Mat Detail

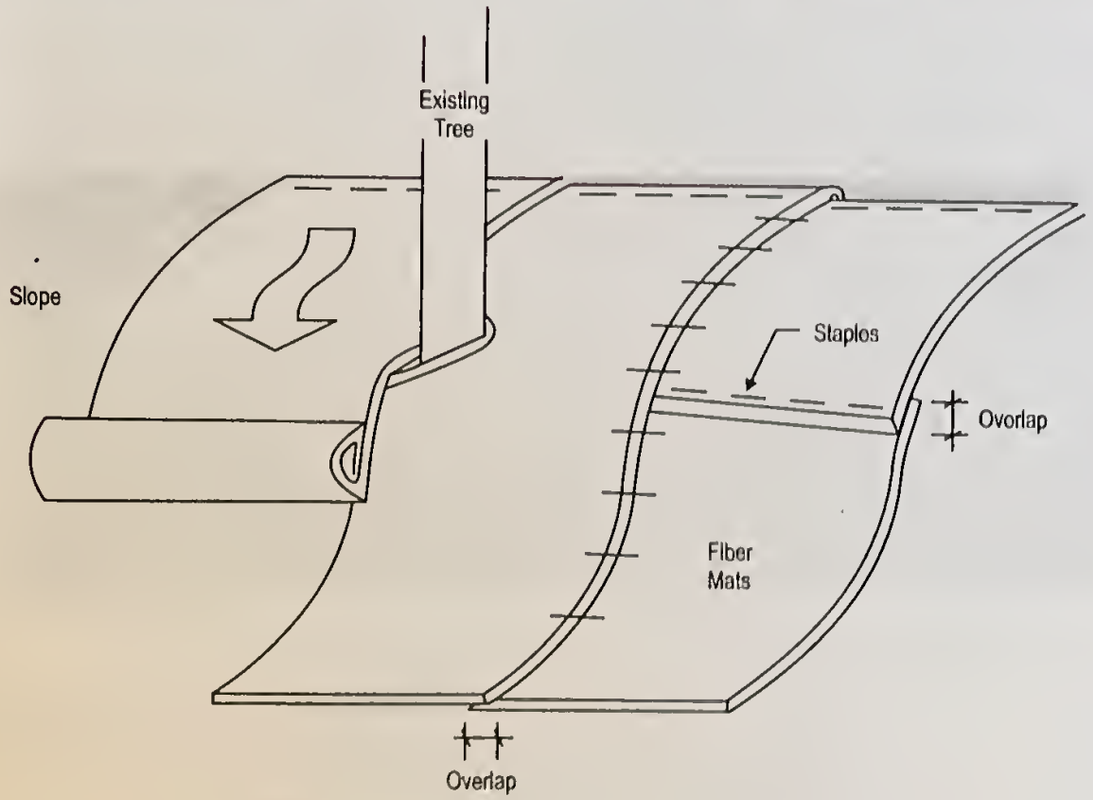


Diagram 2.2-F - Fiber mats on slopes

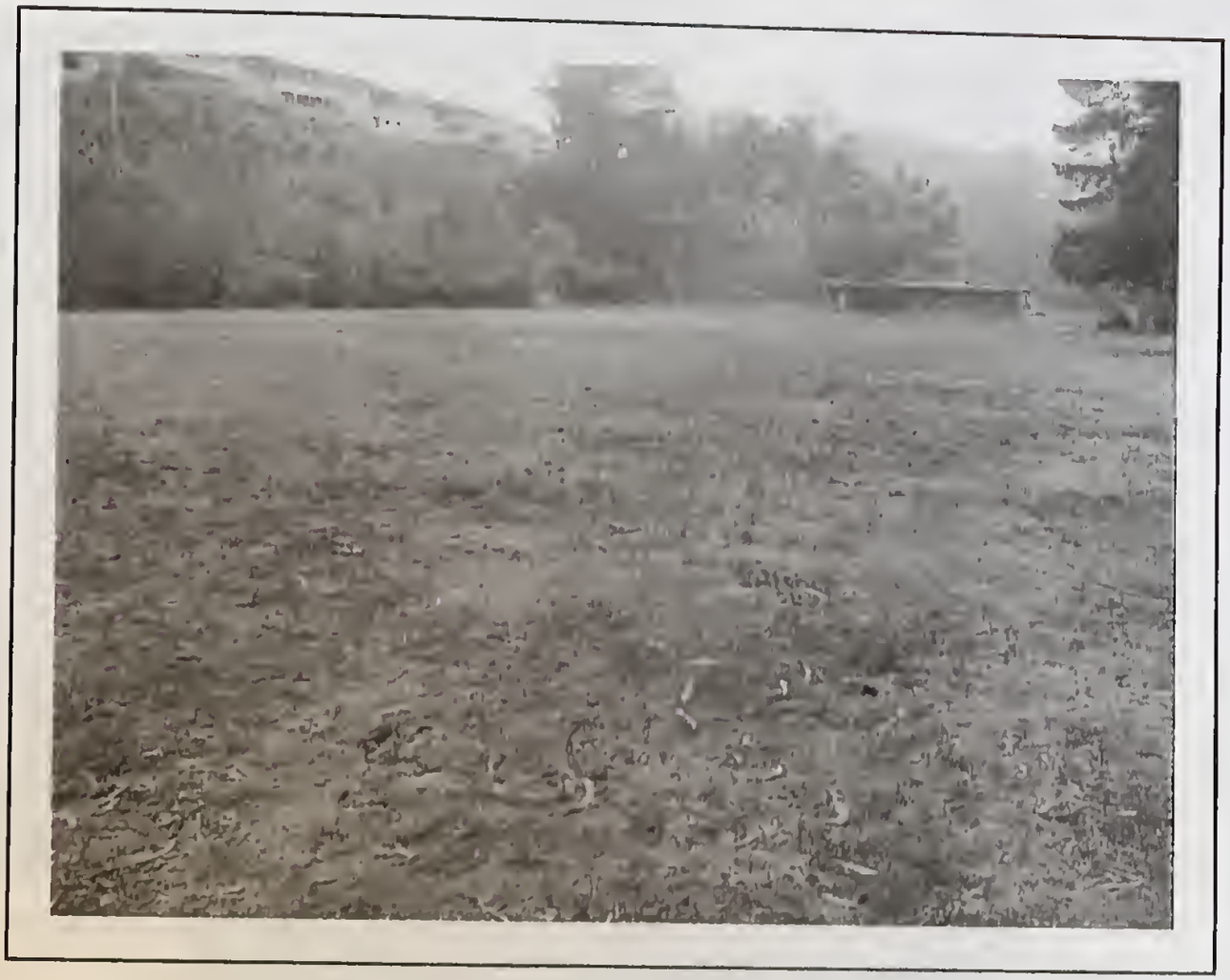


Figure 2.2-H - Meadows focus area

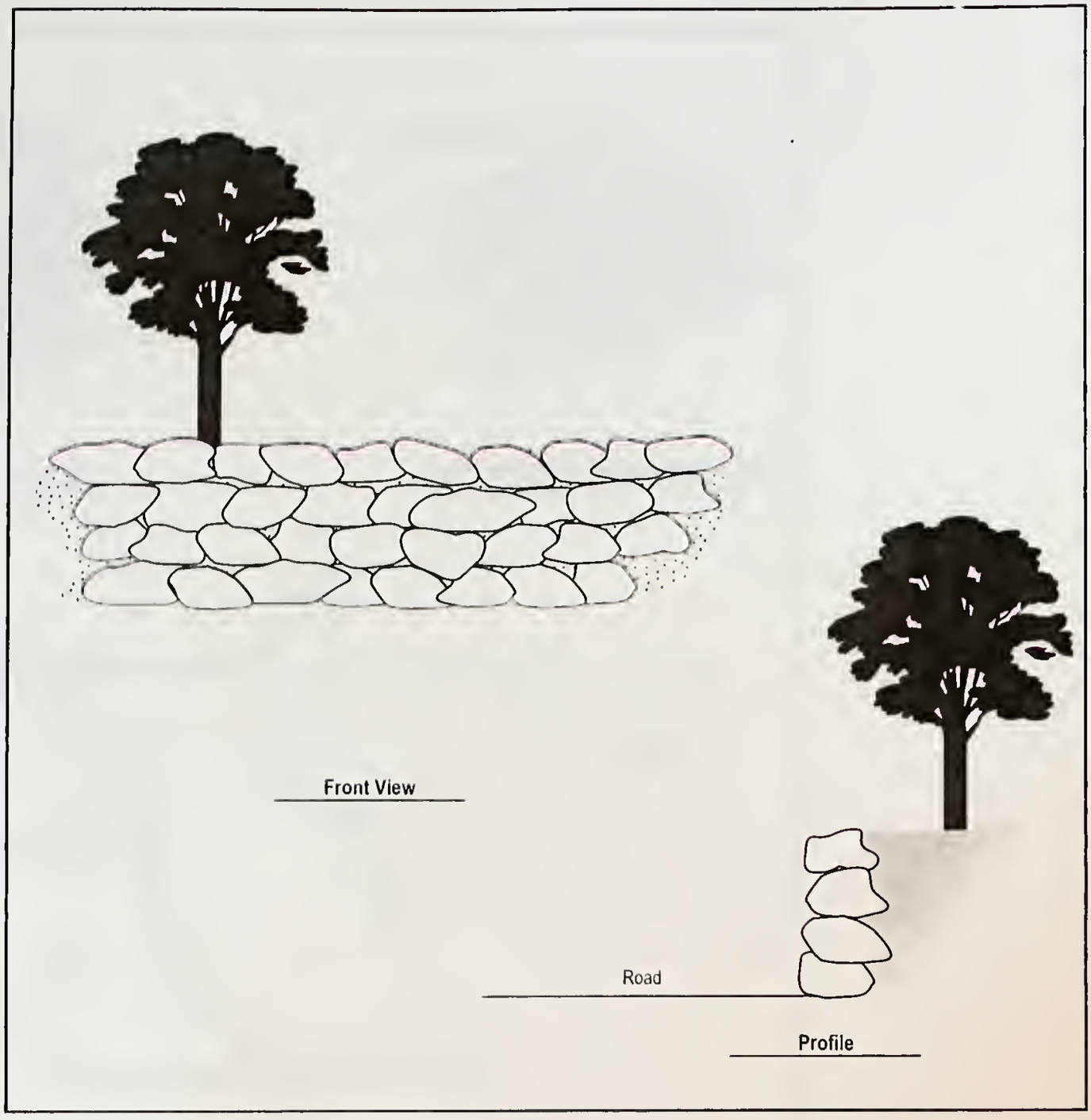


Diagram 2.2-G - Natural stone retaining wall

6/05/03 vsa ..\28065826 Stem Grovel\2.2-G_retaining wall.cdr

Figure 2.2-J - Wawona storage shed focus area

Figure 2.2-I - Toe of Pine Lake slope focus area

Figure 2.2-L - Concert slope focus area

Figure 2.2-K - Crestlake Drive - Vale Avenue entrance focus area

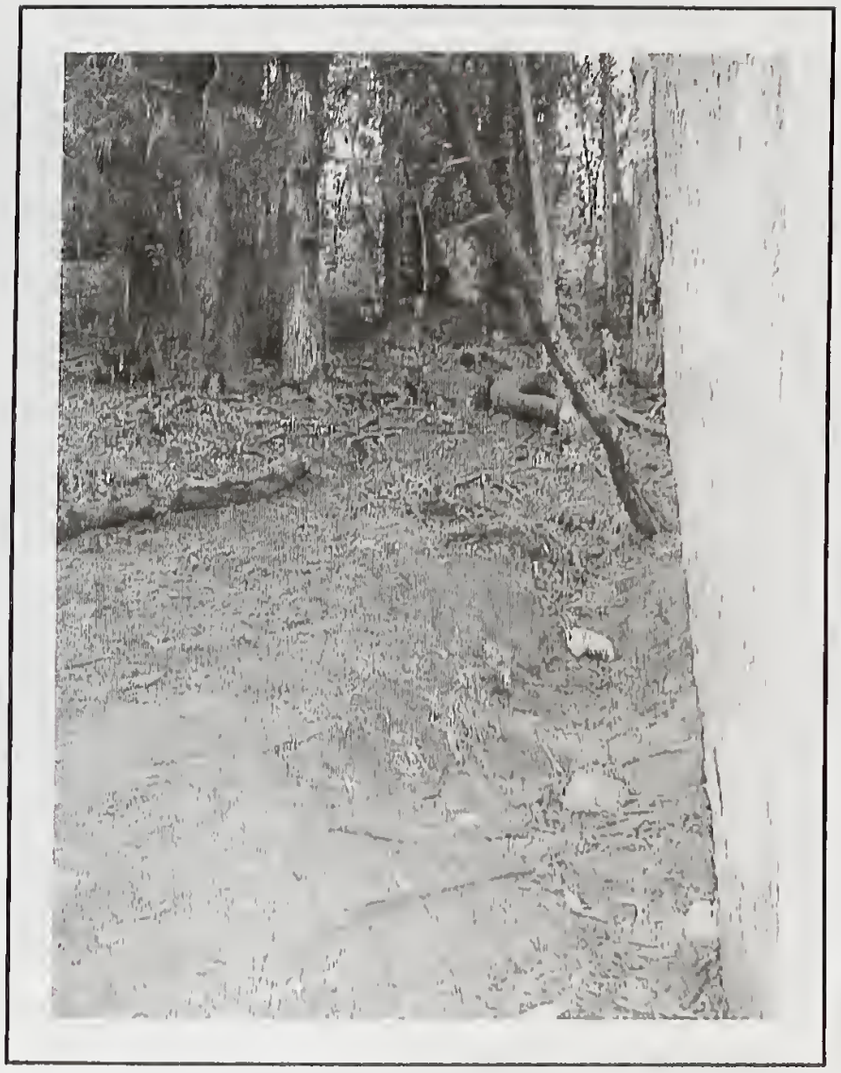
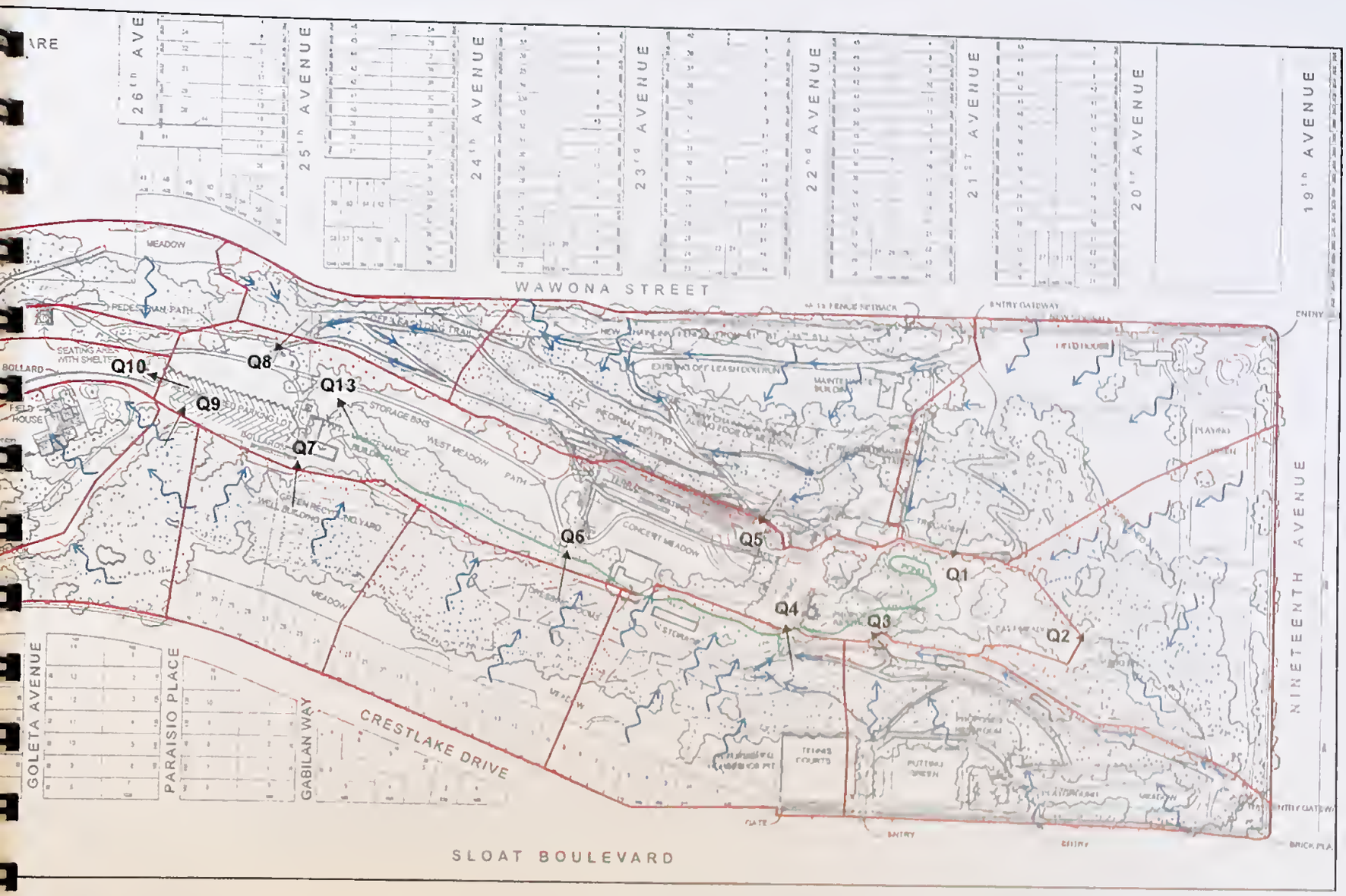


Figure 2.2-M - Gully north of field house

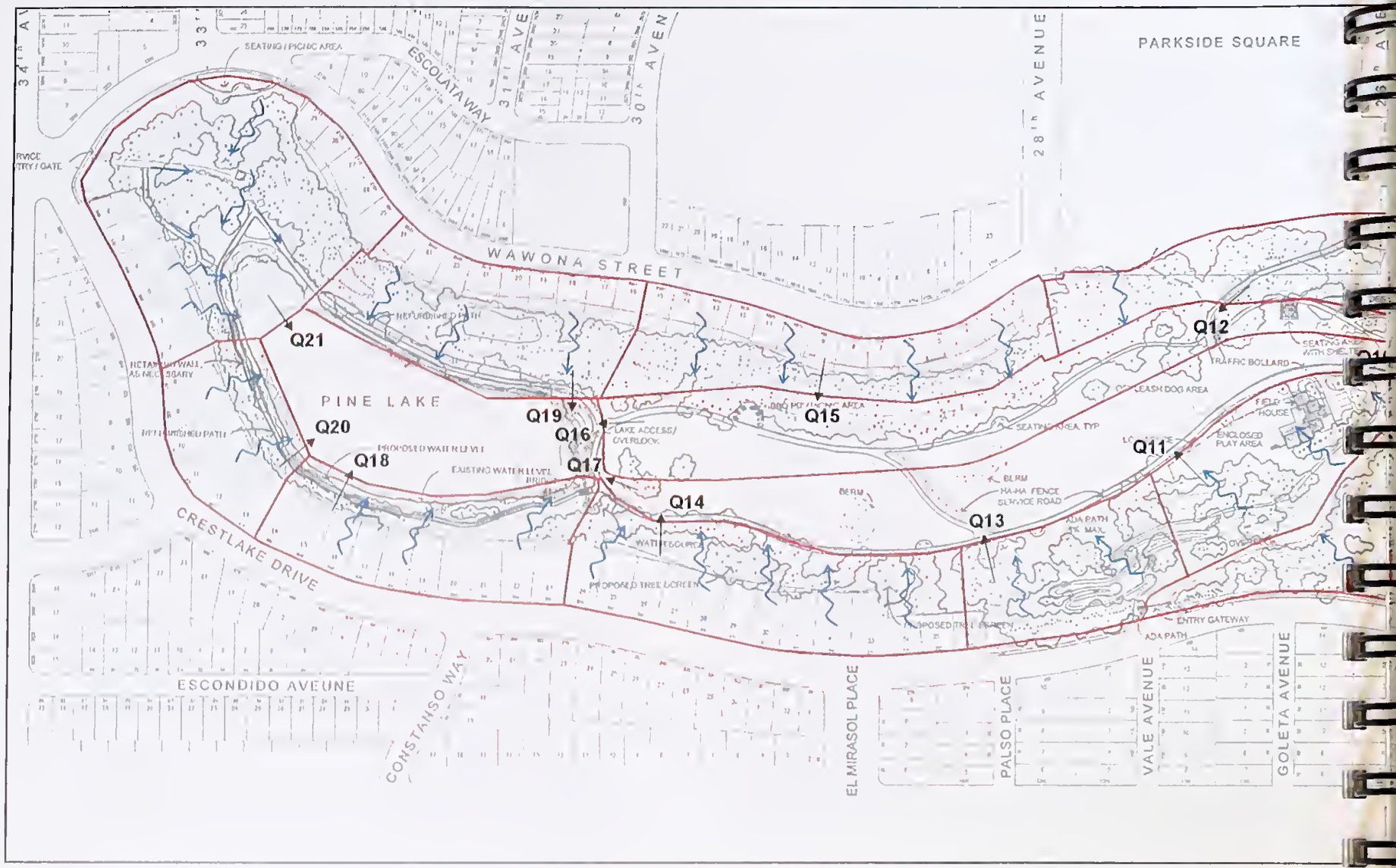
Figure 2.2-N - Slope south of Pine Lake



STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN

Existing Drainage Patterns and Drainage Sub-Basins

Diagram 2.2-O



LEGEND

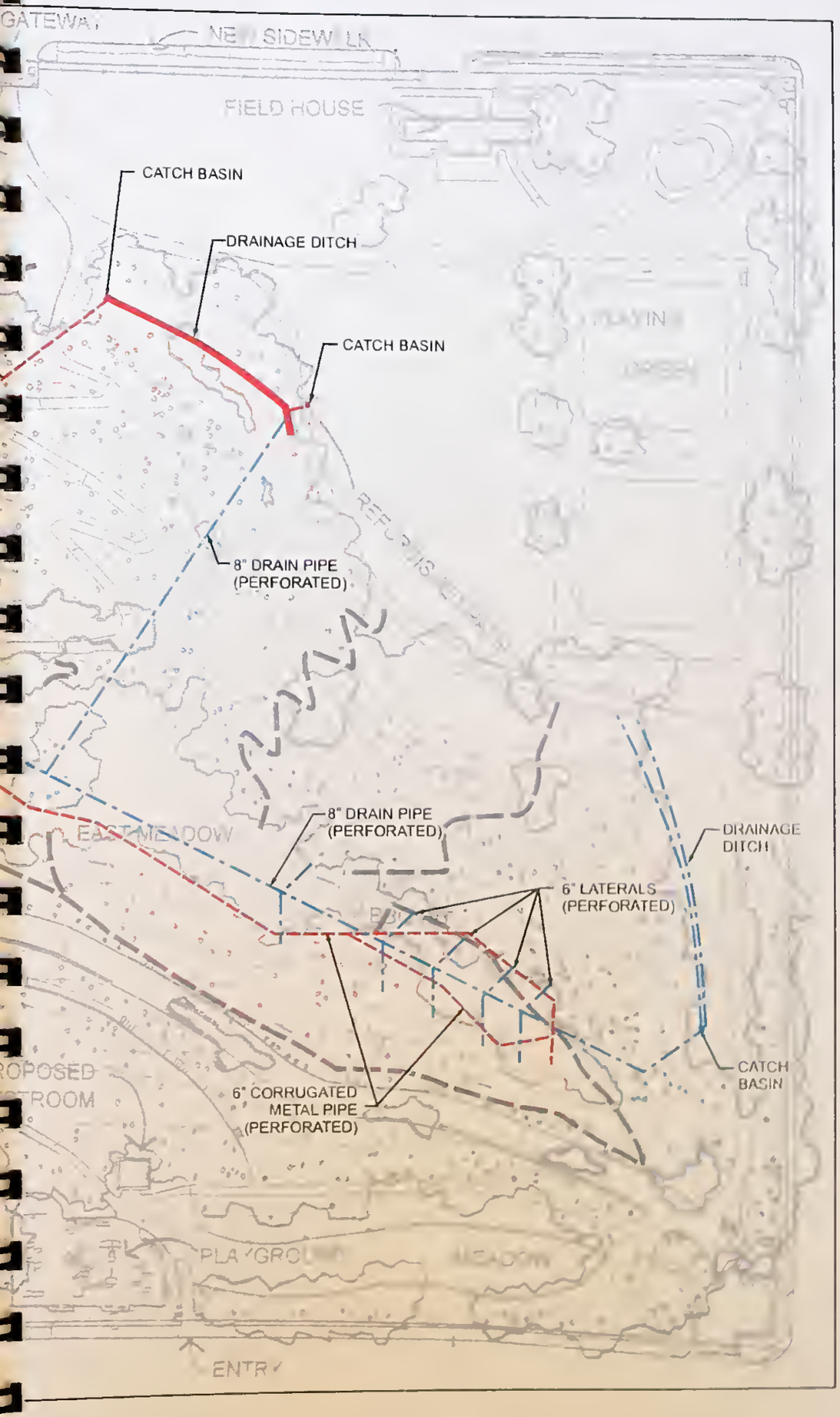
- DRAINAGE SUB-BASIN
- DIRECTION OF FLOW
- Q12 — FLOW RATE FROM SUB-BASIN
- NATURAL DRAINAGE CHANNEL

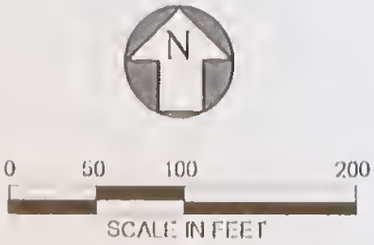
250 0 250 500

SCALE IN FEET

N

5826 Slem Gravel2 2-0 drainage.cdr





LEGEND

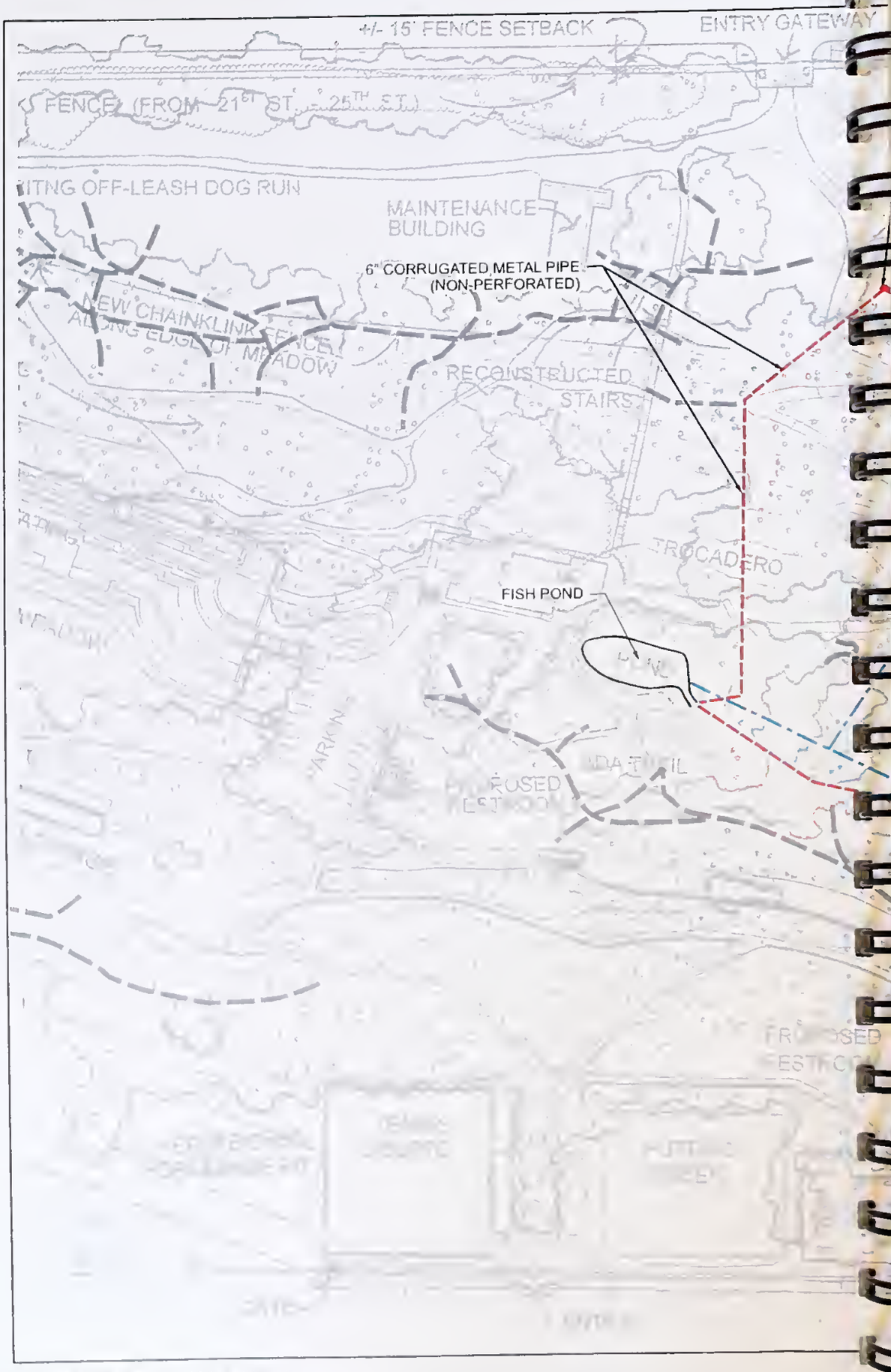
- SUB-DRAINAGE IMPROVEMENTS (JULY 13, 1950)
- SUB-DRAINAGE IMPROVEMENTS (MAY 13, 1955)

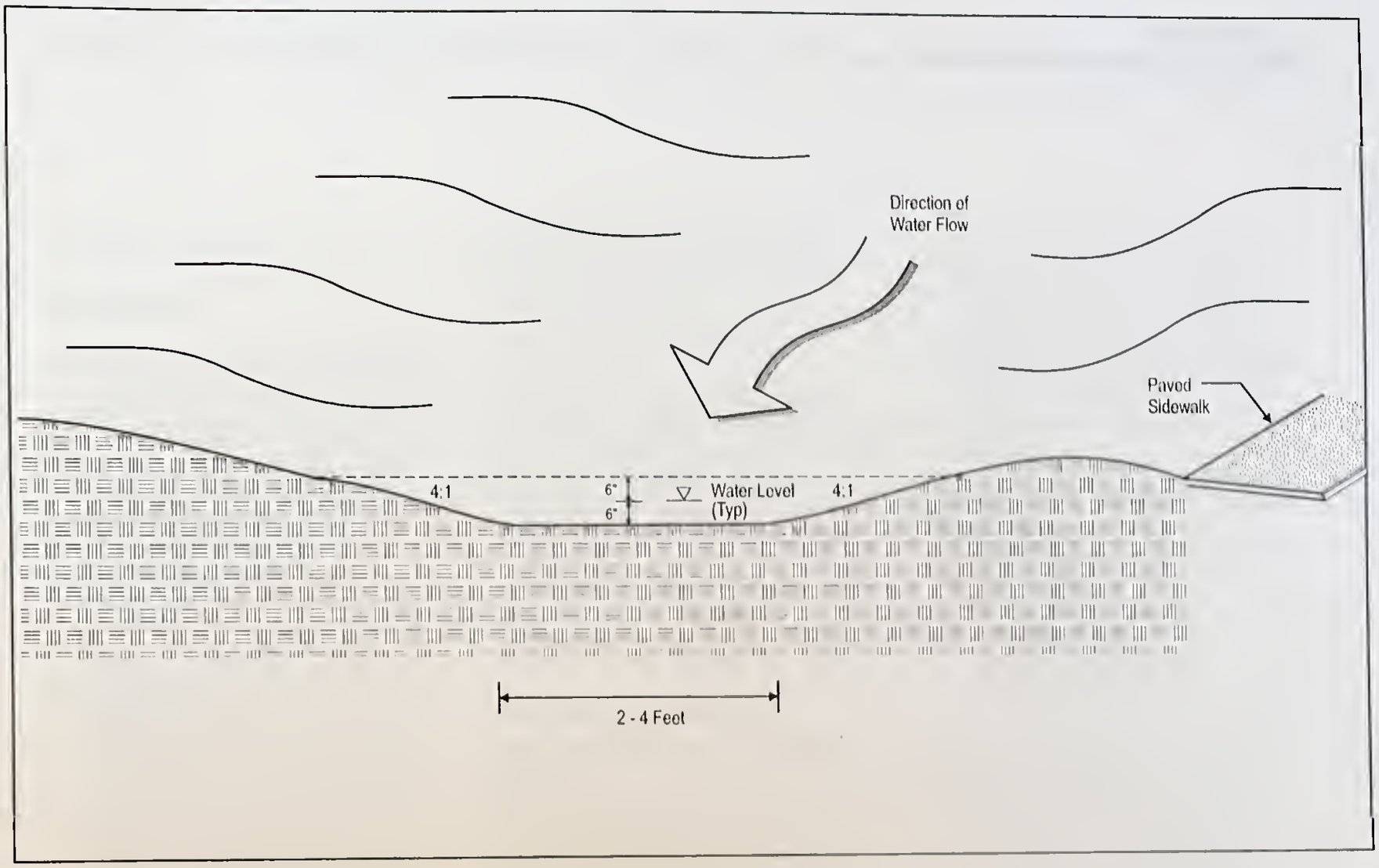
NOTE:
EXISTENCE AND EXACT LOCATION OF ILLUSTRATED SUB-DRAINAGE IMPROVEMENTS HAVE NOT BEEN CONFIRMED

STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

Existing Sub-Drainage Features

Diagram 2.2-P


+/- 15' FENCE SETBACK
ENTRY GATEWAY
FENCE (FROM 21ST ST. TO 25TH ST.)
MAINTENANCE BUILDING
6" CORRUGATED METAL PIPE (NON-PERFORATED)
NEW CHAINLINK FENCE ALONG EDGE OF MEADOW
RECONSTRUCTED STAIRS
TROCADERO
FISH POND



STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN

Proposed Meadow Swale

Diagram 2.2-Q

6/05/03 vsa \28065826 Stern Grove\2.2-Q_prop mead swale.cdr

FIRE PROTECTION

Overview

The existing fire protection system within Stern Grove and Pine Lake Park is inadequate to effectively service the park landscape in the event of a fire. This is due mainly to the fact that only one low-pressure fire hydrant exists within the 64-acre facility. This single hydrant is located in the Stern Grove Parking Lot. In addition, only two fire panic alarms exist in the park – one at the Trocadero Clubhouse and one at the Stern Grove Parking Lot. As stated in the Assessment Report, more panic alarms should be available in the event of a fire.

Additional fire hydrants are available to firefighters along the streets bordering the park. These hydrants primarily serve the adjacent residences, but could be utilized to fight fires along the park perimeter slopes.

Access to the park is adequate during non-event days. However, during events access has proven difficult due to the volume of vehicles and pedestrians in the park.

The fire protection system in Stern Grove and Pine Lake Park should be improved through the expansion of the fire hydrant system, the addition of more panic alarms, and the enhancement of emergency circulation routes into and throughout the park valley.

Recommendations

The Department of Public Works contacted Captain Thomas Harvey of the San Francisco Fire Department, Bureau of Fire Prevention, to review fire prevention needs for the park. A site visit was conducted to determine locations for additional fire hydrants, and potential enhancements for emergency access and circulation.

Provide additional fire hydrants throughout the park valley

New hydrants should be provided at the following locations*:
Pine Lake vicinity
Pine Lake Meadow: mid. meadow
Pine Lake Field House vicinity
Pine Lake Parking Lot and Maintenance Corporation Yard
Concert Meadow

*See Section 7.1 – Water System for additional information.

Enhance emergency access and circulation

Widen park valley service road at pinch point behind the Stage building and portion of road connecting to the entry drive up to the 19th Avenue/Sloat Blvd. entry.

Provide three-point or "Y" fire truck turn-around area at end of service road near Pine Lake.
Widen the service road through the Pine Lake Park Meadow to 14' minimum (rolled curbs ok). (See Section 3.1 – Automotive Circulation, Parking and Roadways)

General Fire Truck Circulation Requirements

Desired clear width for circulation routes: 20 feet
Turning radius: 35 feet
Loading requirements:
Engines: 40,400 lbs.
Trucks: 70,000 lbs.

Provide additional Fire Panic Alarms Throughout Park

Panic alarms will be provided in new park buildings. (See Section 6.0 - Buildings and Structures)
Additional alarms should be located in the Concert Meadow, Pine Lake Parking Lot, and near Pine Lake.

Manage park trees and forest

Ageing park trees and dead wood should be removed.
Under story planting and debris, which are determined to pose fuel-loading threats, should be cleared and removed.
(See Section 2.1 – Forest Management)

LAKES AND WATER FEATURES

Pine Lake Rehabilitation

Rehabilitation of Pine Lake was among the community's top priorities for Stern Grove/Pine Lake Park. The main issue at the lake is the water level, which was several feet higher in years past. Another issue is the invasive nature of the aquatic vegetation in the lake which, if left unchecked, would likely result in the lake shrinking and eventually disappearing as sediment builds up. The water quality in the lake is acceptable, but raising the lake level (and increasing depth) will improve water quality further. Raising and maintaining a higher lake level will require finding a source of water. Some parts of the lake may also have excess sediment removed (primarily at the east and west ends of the lake). Care will be taken to avoid damaging the lake's natural seal when removing sediment. The final step of the Pine Lake rehabilitation will be to address the lake edge to prevent erosion. This will be done with a combination of rock placement and vegetation. Temporary fencing of the paths around the lake to prevent trampling of the lake edge will also be recommended.

Summary of Pine Lake Rehabilitation Recommendations

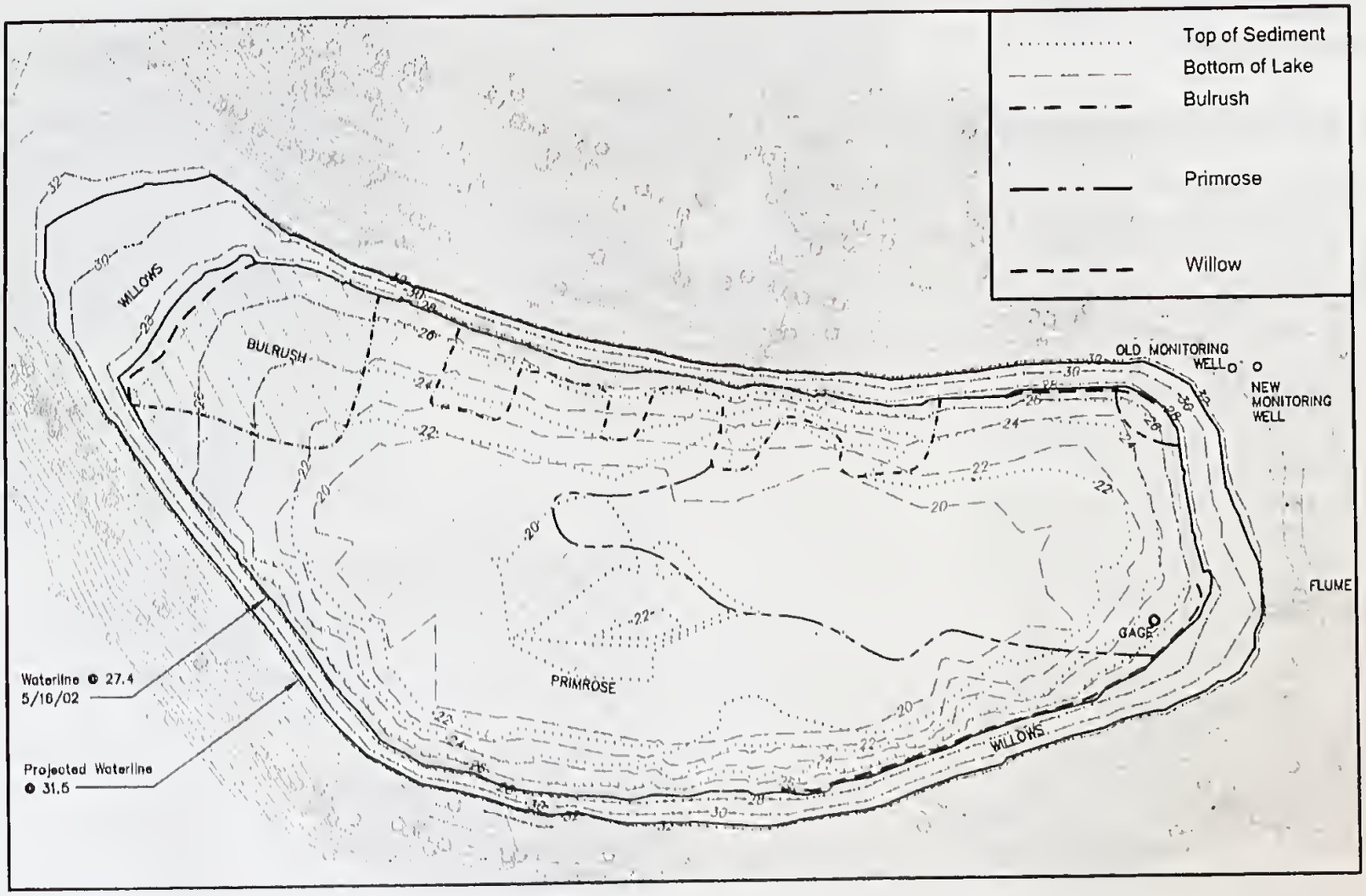
- raise lake level (approximate level 31.5')
- physical removal of invasive aquatic plants (on-going maintenance operation)
- careful removal of sediment
- lake edge treatment to prevent erosion – combination of rock, vegetation and fencing

Bathymetric Survey

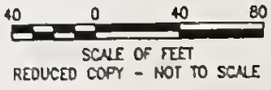
A survey of Pine Lake was conducted May 16, 2002, which measured the Lake bottom, sediment thickness, and general edges of aquatic vegetation. The results of this survey are indicated on the following pages. The water level at the time of survey was 27.4 which, incidentally, matches the reading on the existing water level gage in the Lake.

The survey yielded the following Lake statistics:

Surface area at Elevation 27.4	2.71 acres
Surface area at Elevation 31.5	3.42 acres
Volume (including sediment) at 27.4	4.90 million gallons
Volume (including sediment) at 31.5	8.96 million gallons
Sediment volume	0.76 million gallons (3,746 CY)
General bottom depth (May 16)	8 feet
Deepest point (May 16)	8.7 feet
General sediment thickness	1 foot
Thickest sediment	3.2 feet



Pine Lake Existing Conditions



Raising the Lake Level
Raising the level of Pine Lake will be the most important step in its rehabilitation. To accomplish this, a source of water is needed to raise and maintain the lake level. A discussion of options for a water source is contained later in this report. Another factor in being able to maintain the lake level is the assumption that the soil around the lake will be able to hold the water. Historically, the lake level has varied over time, lowering during dry periods, and raising during wet periods. A new observation well near the lake has shown the groundwater to be at the same elevation as the lake. If the lake is solely an expression of the ground water table, then the soil may not contain much clay, and maintaining a higher lake level will require continuous pumping of well water to make up for the leakage. Even with a dedicated water source, there may be drought periods when the water source is limited (for real or political reasons), so we should be prepared to have a lower lake level during a drought.

Desired Lake Level
The path on the north side of the lake is at approximately elevation 34.0. The lake level varies with conditions. It was surveyed to have an elevation of 26.7 in 2001, and 27.4 in May 2002. If we set the desired lake elevation 2.5 feet below the elevation of the existing north side path, then the desired lake elevation would be at elevation 31.5 (approximately 3 to 4.5' above recent lake levels).

Potential Water Sources
The primary issue at Pine Lake is the expressed desire in the master plan to maintain the lake at a higher level than it currently exists. In past years, the on-site well provided water for the lake. After the well was closed, occasional water was added from the City's potable water (apparently this was not done in the last few years). A discussion of the options for a water source for Pine Lake is below. Of these options, it is clear that the best solution is to reactivate the existing well in the park and supplement that water with local runoff from within the park. The Recreation and Park Department is discussing the possibility of well use with the Public Utilities Commission. At the time of this writing, the Department is optimistic that use of the well can be arranged.

The options for adding water in Pine Lake include the following options:

A. Increasing storm water runoff into Pine Lake. This option can be accomplished within the park by redirecting storm water to the lake. Some of the storm water currently goes into the sewer system. Runoff from internal park roads and parking areas would need to be filtered prior to reaching the lake. There is also the possibility, although likely an expensive one, to reconnect the drainage and springs that come from Mt. Davidson, north of 19th Avenue.
B. The next option is to continue to add City water as needed. This option is not viable in the long term due to the consumptive nature of this use. The water department will also be adding chloramine to the water supply starting in 2004. Unlike the currently used chlorine, which evaporates, chloramine is persistent and harmful to fish and plants.
C. Reclaimed water from a tertiary treatment plant to be built in Daly City (or eventually in San Francisco) is another option, but one that has its own set of problems. Reclaimed water can have high amounts of nutrients and salts, which again would be harmful to the lake's water quality. A reclaimed water line would need to be extended to Stern Grove. There is also still a public perception issue on the use of reclaimed water in lakes. Reclaimed water would be better suited to meeting

some of the irrigation needs at the park.

D. The final option, and perhaps the best option, would be to reactivate the existing well in the park for lake supply purposes only. The Luhdorff & Scalmanini report on the Westside Ground-Water Basin seems to indicate that there can be some local use of the aquifer without negative consequences. Well water would provide a reliable on-site water source, without any water quality issues. The water put into the lake would stay within the aquifer with little loss (only evaporative loss). Water needed for irrigation in the park could be a combination of City water and reclaimed water. Use of the well water is subject to approval of the San Francisco Public Utilities Commission.

Testing Lake's Ability to Hold Water

In order to evaluate the feasibility of raising the water level of Pine Lake a full-scale test should be conducted by introducing water into the lake to raise the level to the desired level and then monitoring the raised lake level to determine leakage. A preliminary estimate has been made of water volumes required based upon data obtained from two lakes in Golden Gate Park. Middle Lake and the southern section of North Lake are similar to Pine Lake in that all are ancient lakes that once were surface expressions of the ground water table, all are located in dune sand, and all are at the terminus of drainage channels.

Based upon known data from these lakes, preliminary estimated flow rate to raise the Pine Lake to the projected water level over a 15-day period is about 9 million gallons (400 gpm). A preliminary estimate of water volume to maintain the projected water level is 300,000 gallons/day (210 gpm) in summer and a slightly reduced rate during the rainy season.

Removal of Invasive Aquatic Plants

There are two types of invasive plants at the site. The first and most detrimental to public and water quality is the water primrose (*ludwigia hexaflora*), which is a marginal rooted plant. The second plant is native *Scirpus* or Bullrush, which is discussed later. The Primrose grows out from the shore, intertwining itself and eventually creates the dense coverage that exists at the site currently. The plant is fibrous and difficult to cut making it a hazard for entrapment or entanglement.

As Primrose is a non-native, invasive species, eradication of the plant would be desirable, however, this is most likely improbable. Substantial removal of the plant mass and its root structure can be accomplished with waterborne equipment. The previous removal operation (completed in 1996) was very successful and a similar process should be employed again. The removal involved the use of a floating, self-propelled multi-purpose platform that could remove large amounts of the plant with its bucket. Conventional land-based equipment was found to be too large to achieve the reach required to remove the biomass from the edge of the lake where access was possible (North side only). The 1996 removal was somewhat larger in terms of vegetation and required a significant amount of stockpiling at the East End of the lake. Options for the removal at this point (based on current growth levels), would be as follows:

1. Remove biomass with Aquamog and LGP equipment;
2. Stock pile material for a short duration for dewatering (1 to 3 weeks, max);
3. Off haul and dispose of material, either as landfill or green waste (alt.)

The second vegetation concern would be the tule growth at the lake edge, specifically, the *Scirpus* or Bulrush. This plant has some habitat and aesthetic value for migratory birds and aquatic species, but must be maintained through regular clearing intervals.

If unchecked, the plant will continue to fill in areas around the lake edge and shallows, decreasing open water and facilitating retention of sediment. The plant will grow in water depths up to 40", however, it has the ability to create a floating "sheif" in areas where the root mass (rhizomes) is allowed to mat together. Multiple windows were cleared in the 1996 removal, which are now beginning to fill in. The recommendation is the clear the existing windows for both habitat and recreational enhancement, and initiating some removal in the West end and overall thinning as well. Removal can be in the same format as that of the Primrose, with the use of the Aquamog and LGP support equipment. For the purposes of minimizing site and peripheral damage, the clearing operations (of both types of vegetation) should be performed consecutively. Using photos from 1996, the growth and control cycle appears to be a 5 to 7 year event – funds for regular maintenance should become a budgetary item. Considerations to this operation are as follows:

1.) **Permits:** Permitting for the work will involve (most likely) contacting the Department of Fish and Game (CA.), and possibly the US Army Corps of Engineers (based on the subsequent heading – *Removal of Sediment*). For these reasons, our recommendation is to pull a JARPA (Joint Aquatic Resource Permit Application), which all interested agencies are contacted via one application (as opposed to several individual applications). This process is intended to streamline the application procedure, utilizing a format that is acceptable to all regulatory agencies. Although the permit can be filed by Parks Staff, this action is typically implemented and followed through the regulatory channels by a consulting (biological) agency specializing in this action.

2.) **Timing:** Timing for the permit process will vary, based on the number of application contacts required and time of the season. Typical timeframes range from three to eight months, however, the process could be expedited by the consulting agency (hand walk the application through the various agencies). This will typically add an additional ten to twenty percent to the overall permit costs. Timing for the project will also vary, based on how soon the work is performed. The vegetation will continue to spread out across the lake as indicated, so removal at this point in time will require less time than that of a later point in time. The removal as currently exists is estimated at five to seven days, including the clearing at the tule windows.

3.) **Cost:** Cost of the JARPA is estimated to be in the $7,000 to $9,000 range (includes required biological studies), with the cost spread representing timing and overall project (cost) estimates. Removal operations are estimated at $11,500 to $18,750, depending on the equipment and time required to complete the project. Off haul and disposal costs would be in addition to the removal work. Off haul and disposal costs will be based on weight and or volume, and would be in the range of $8,000 to $12,000 for conventional disposal. Alternative sources of disposal can be sourced out, but will be dependent upon time of season and site availability.

Scope of Work: The scope under this section would include the removal, stockpiling, off haul and disposal (or alternative). Specifications should be detailed to reflect areas of removal, method of operation, environmentally sensitive concerns, and disposal. This item should be an all inclusive type scope, so as to create a simplified line item.

Removal of Sediment
There is not a great amount of sediment in Pine Lake, generally less than one foot. Some areas do contain more and these are clearly indicated on the bathymetric drawings. It is not advisable to attempt to remove sediments within a foot or so of the lake bottom due to the great risk in disturbing the existing bottom seal that has developed over time. However, sediments greater than one foot thick should be considered for removal to maintain the lake's volume and quality.

Removal of accumulated sediments (alluvial or otherwise) should be based on the recently completed Bathymetry. Areas of concentration would be primarily oriented at locations of shoaling or larger accumulations as a result of storm and or erosion related occurrences. Shoaling is the result of rapid inflow of turbid (high-suspended solids) water inflow, usually associated with storm drain inlets or storm water inflow locations. Shoaling or a mounding of materials results in the area where the suspended solids settle out. It is not feasible, nor necessary to dredge the entire site as the lake has sufficient depth for (acceptable) water quality purposes. Given this, a practical approach would be to remove these areas where extended shallow conditions or high spots are contributing to vegetation/algae growth and or are impeding the natural course of the lake. Based on the recent Bathymetric survey, the total amount of sediment material is less than 4,000 c.y., of which about 2,500 c.y is problematic from a water quality standpoint or available for removal under a dredging program.

Dredging material in these amounts would be considered a small project and would have to be accomplished by clamshell type removal. The use of hydraulic or "wet" dredging would not be feasible given the constraints of the site as well as the additional permit requirements. For the purposes of this report, the material costs estimated are based on a clamshell removal type process.

Desired or anticipated outcomes of the dredging would be the reduction of algal or vegetation development in the (currently) shallow locations of the lake. Reduced vegetation translates into less organic matter decomposition, the primary cause of dissolved Oxygen depletion (during the warmer months). Reduction of shallow water locations will improve water movement, assisting in the reduction of thermal stratification or temperature layering, further reducing the anaerobic generation of gasses (primarily Methane).

Dredging Costs:
Given the small amount of material removal, costs for removal would be based on a mobilization, removal, processing, off haul and disposal. Hard or fixed costs (mobilization, etc.), will increase the per cubic yard rate, whereas these costs are typically spread over several thousand yards of material. The costs, based on the operation as indicated, would be as follows:

Dredging costs, based on 2,000 to 2,500 cubic yards total, removed are estimated to be in the $16.00 to $20.00 per c.y. range. Production rates of removal should be in the 160 to 200 c.y./day arena, assuming that the offload point(s) are relatively close in terms of proximity to the areas to be dredged. It is advisable to use an offload/stockpiling location at the west end of the park, near the existing restrooms (the location of the 1996 vegetation stockpiling). This site could accommodate the bulk of the material, while allowing settled (clean) water to filter back to the lake for recharge.

Mobilization / Demobilization for a small, clam bucket style dredge, launched and set up, including a dewatering pit, should be in the 10-15% range, based on the overall project costs. In

this case, the costs are estimated at $3,200 to $7,500, which would include a means of material transport (from lake to stockpile site).

Permitting: Permits for a dredging project of this size may involve the U.S. Army Corps of Engineers, unless the total amount of material was to be less than 750 c.y. The possibility of combining the vegetation removal and dredging operations under the same permit exists, as the California Department of Fish & Game will also require a Streambed Alteration Permit for dredging as well. Timing of the dredging will mirror the vegetation removal with work commencing in April, and completion prior to October 1. If the project master budget can be allocated, it would be advisable to encompass these operations under one season's work. The savings as a result of reduced mobilizations and redundant permit/biological work would produce a significant return in reduced overall project costs.

Project Timing: As noted, project timing for dredging activities would also be in the April through October period, however, a biological assay will determine if there are any other complications. As with the other projects within the area, a thorough site investigation and documentation will be performed as part of the permit process. Key areas such as threatened or endangered species habitat/presence will be noted, having an impact on the methods, timing and scope of the remediation operations.

Spoils Disposal: Off haul and disposal of the (dewatered) material should be part of the project scope. In most cases, this can be as costly as the dredging itself, given the "worst case" scenario, standard landfill disposal. Under this assumption, the cost of up to $25.00 per ton could be expected, however, a figure of $9.00 to $14.00 is more realistic. As an alternative, the material could be used on site (if needed) or transported to a suitable location where fill is needed. In these cases, timing planning of the project is critical. Under this scenario, the material would be taken as free disposal, incurring only trucking costs to remove the material. A standard trucking cost of $2.00 to $5.00 per c.y. would be expected, assuming a disposal site within 30 to 60 minutes (round trip). All possible options should be exhausted prior to committing to landfill disposal.

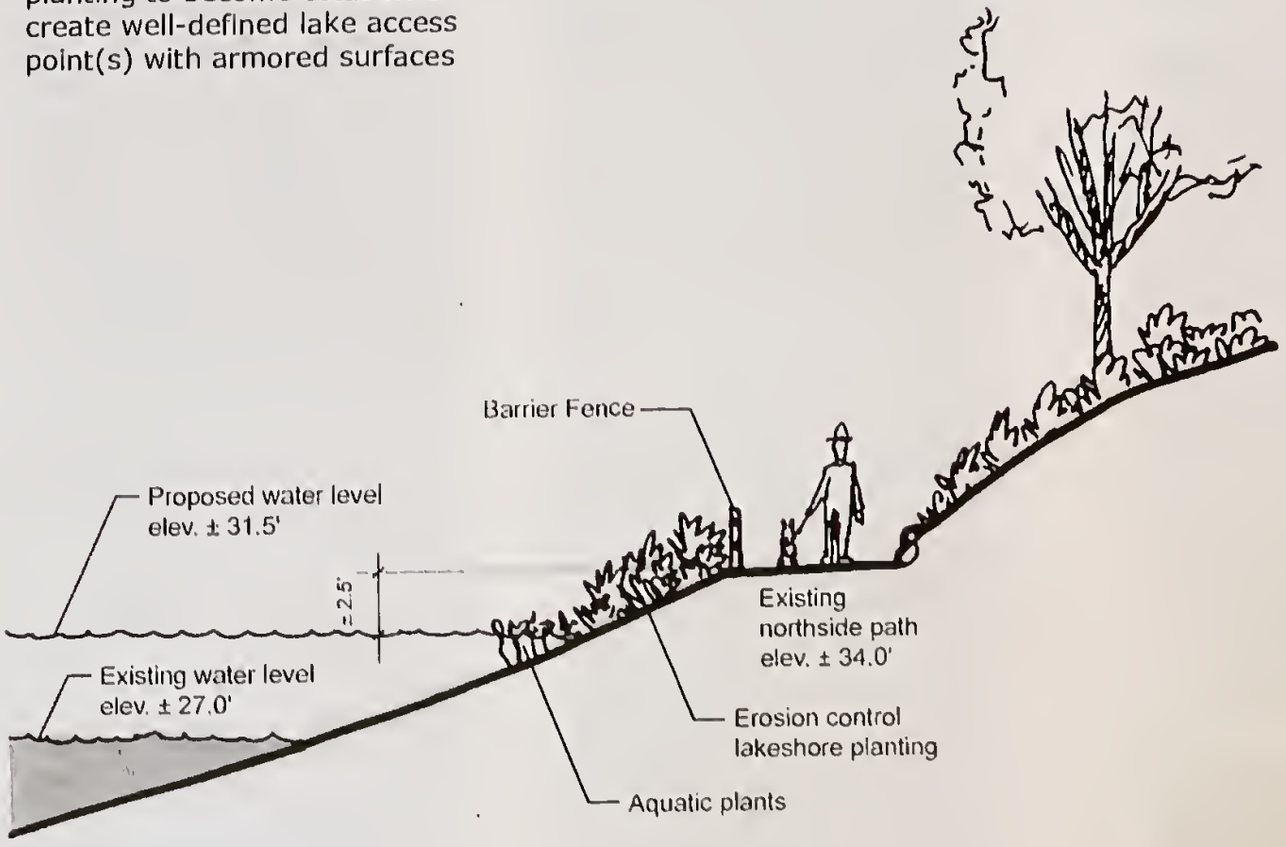
Lake Edge Treatment

The goal of the lake edge treatment is to minimize erosion. Erosion generally occurs where the lake edge is trampled by people and dogs. Those areas are devoid of vegetation, while other areas have dense planting along the lake edge. The plan is to control lakeside access points and plant the lake edge. Access points will be clearly demarked and soil at the lake edge may be armored with rock or cobbles to minimize erosion. Other areas will be re-vegetated with appropriate, temporary plants and protected with a low fence or barrier along the adjacent trails. Options for a barrier can range from a simple post and cable (not effective against unleashed dogs) to a low, coated chain link fence (effective against unleashed dogs).

Rock can also be used to armor the lake edge on steep shorelines, however, the uncertainty of achieving and maintaining a desired lake level make the placement of rock problematic. Rock can be used at the water line to eliminate erosion caused by wave action on exposed soil. Due to the natural condition of the lake, it is recommended to use rock at the water line only after the water level has been raised and erosion issues persist. Erosion control planting should be the initial method. Rock can also be used as an accent to demark the limits of lake access points.

Summary of Lake Edge Recommendations

- create erosion control planting around lake edge
- install temporary vegetation establishment fence along lakeside paths to prevent undesired access to lake edge and to permit erosion control planting to become established
- create well-defined lake access point(s) with armored surfaces



Typical Section Along Northside of Pine Lake

Scale: 1/8" = 1'-0"

Water Course into Pine Lake

There has been a stated desire to re-create a watercourse that flows through the length of the park and into Pine Lake. At the time of this writing, the design is still in flux and budget considerations may result in a phased approach.

There is a natural drainage pattern through the park that indicates that there likely was some form of natural watercourse prior to the park's development. There is a remnant watercourse that leads from the Fish Pond at the Trocadero to the Pine Lake parking lot. In years past, when water overflowed the Fish Pond, it would flow down this watercourse. Water from the well (assuming we can use well water) can be pumped, as it previously was, to the cistern above the Trocadero, from which it would flow into the Fish Pond. Depending on the final design, this could be the source of water that flows down a new watercourse between the parking lot and Pine Lake.

The watercourse should ensure minimal water loss en route, so its construction should be waterproof. For durability, its construction should include both a concrete liner for structural stability and a membrane liner for waterproofing. Its design should result in a natural-looking watercourse with all concrete hidden by rock. The watercourse should vary in width and consist of a series of low water falls, basins, and rills. Good design detailing, a skilled and motivated contractor, and construction oversight are necessary for the watercourse to look natural.

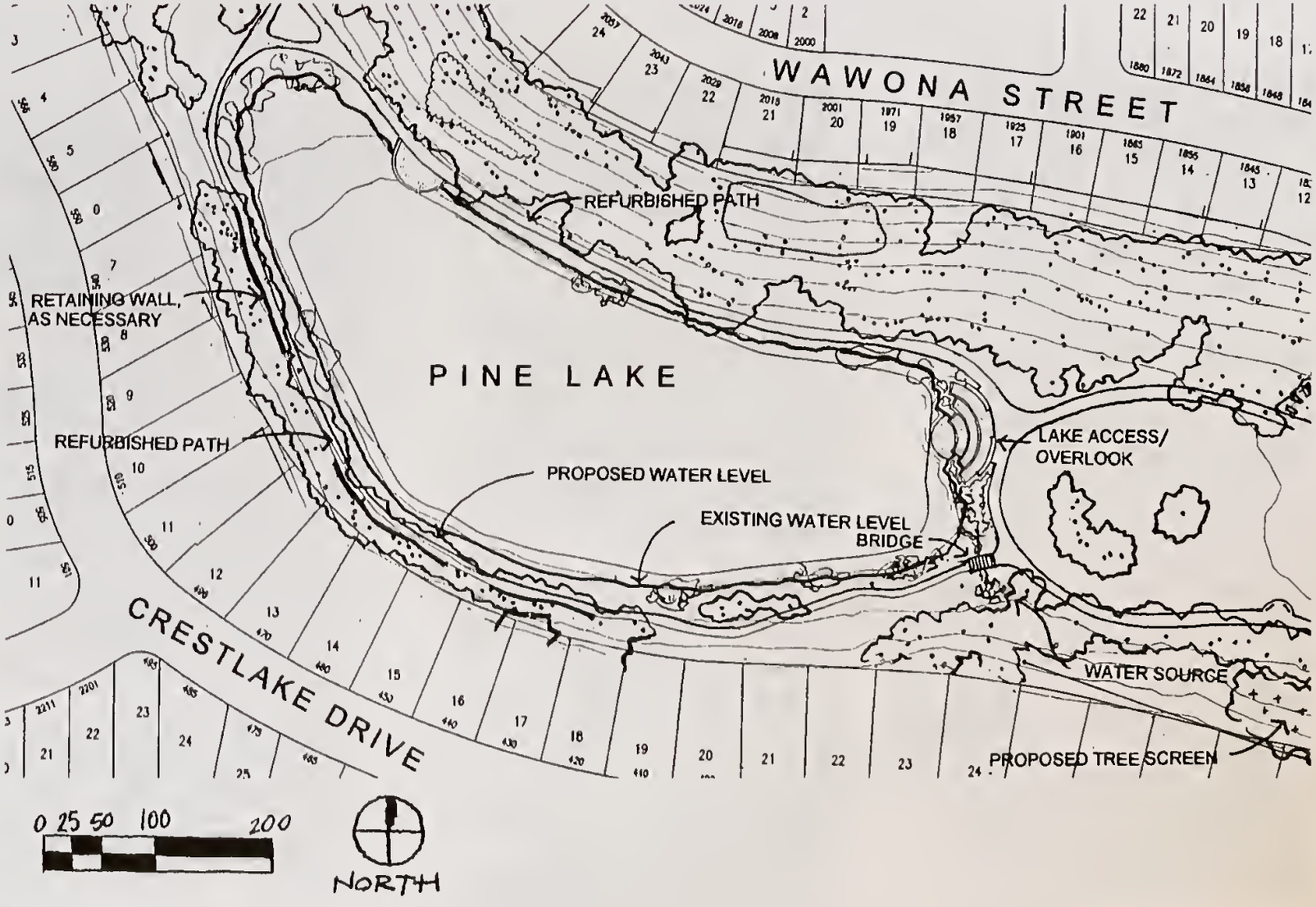
The lower section of the watercourse will likely need to be located along the route of the existing path, which follows a natural drainage. The existing path will need to be relocated to higher ground. The lower section should also be wide enough to create a riparian corridor before entering Pine Lake.

Construction of the watercourse as described above will be relatively expensive. An option would be to have a fully constructed watercourse with a water source only in the lower section. A simpler and less expensive drainage channel could be constructed up to the Pine Lake parking lot, and restore the existing drainage channel from the Fish Pond to the parking lot. The lower watercourse could operate directly from the well and carry water only when needed to maintain the lake level, or a re-circulating system could be installed to have water running continuously. The remainder of the drainage channel could be simply graded into a continuous channel, with rock at strategic points to prevent erosion. Its main function would be to carry on-site runoff down through the park.

The fully constructed water course would be approximately 300 feet long, with a width that averages 10' in the rills and wider at the basins. The cost for such a construction might be in the range of $150 to $175 per square foot for a total estimated cost of $450,000 to $525,000.

Summary of Water Course Recommendations

- Create a water course that flows along the route of the existing path and into the lake
- make it as natural as possible with good habitat value
- water source can be directly from well for as-needed water, or re-circulated for continuous flow
- a believable water source should be created at the head of the water course
- create a simple drainage channel connecting the entire park



Watercourse into Pine Lake

WILDLIFE HABITAT

Outline

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- Project Description
- Baseline Biological Site Conditions
  - Pine Lake and Other Water Features
  - Park Forest and Meadow Areas

B. Recommended Habitat Improvements - Lake and Water Features
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- Fish Pond (at Trocadero)
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A. Background Information

Project Description

Stern Grove Pine Lake Park is a large, linear park surrounded by a densely developed residential area. The City and County of San Francisco propose to rehabilitate Pine Lake by increasing water levels, improving lake edges, controlling nonnative aquatic vegetation in the lake; and enhancing lake wildlife habitat values. The City and County of San Francisco also propose to enhance the Fish Pond (at Trocadero), forest, and meadow areas of Stern Grove Pine Lake Park. A portion of this park has been designated as a Significant Natural Area, to be managed for natural resources. This document is intended to provide the City and County of San Francisco with management recommendations and conceptual plans for the enhancement of biological resources within the park.

BASELINE BIOLOGICAL SITE CONDITIONS

A reconaissance-level field assessement was conducted by Loran May (Botanist), Ed Whisler (Wildlife Biologist), and Scott Cressey (Fisheries Biologist) on May 10, 2001, and a supplemental site assessment was conducted on April 30, 2002. The purpose of the field visits was to assess the potential to enhance the park's Natural Areas and existing wildlife, fish, and botanical resources.

This section summarizes the results of the site assessments for lake and water features, and upland portions of the park (i.e. forested areas of cultivated landscape trees and decorative shrubs, and extensive lawn/meadow areas).

Pine Lake and Other Water Features

There are two primary water features at Stern Grove Pine Lake Park, the first being Pine Lake, which is the larger of the two, located at the far west end of the park. The other feature, the Fish Pond, is located at the east end of the park near the Trocadero Clubhouse.

Park lakes and waterways provide important habitat values to dependent plant, wildlife, and fish species. In particular, Pine Lake, a natural water feature, provides important habitat values to dependent native species, including native trees, migratory songbirds and waterfowl. Pine Lake also provides important habitat to a number of common wildlife species such as racoons and opossums, and nonnative introduced wildlife species such as carp, koi, goldfish, and red-eared slider turtles.

Wildlife that were observed during field assessments include birds and other wildlife that are adapted to an urban park setting and high levels of human activity. Stern Grove Pine Lake Park supports many resident and migratory birds: more than thirty-five species of birds and mammals were observed during the 2001 and 2002 field surveys, and signs (i.e., burrows and tracks) of two more species were also observed. Pine Lake has not been previously sampled for fish and other aquatic species. In 2001, City Park/Recreation staff reported that the lagoon supports carp, koi, goldfish, and possibly threespine stickleback. Carp, koi, and goldfish are considered nonnative fish, and were probably introduced into the lagoon by park visitors. Three-spine stickleback is a common native fish species, reported from lakes and waterways throughout the region. The small Fish Pond (at Trocadero) in Stern Grove Pine Lake Park is concrete lined and supplemented with City water. Goldfish are the only fish species reported to occur in the Fish Pond. Being concrete-lined, the Fish Pond does not support aquatic plants. Because it is completely shaded by the surrounding trees, there is insufficient sunlight to support algae growth. This Fish Pond provides limited habitat values to biological resources due to its small size and artificial (hard bottom) nature.

Park Forest and Meadow Areas
Typically, landscaped areas have limited value to dependent wildlife species. However, because Stern Grove Pine Lake Park is relatively large and contiguous, has a year-round source of water (Pine Lake), and is surrounded by developed areas, it provides one of the few open space areas for wildlife in an otherwise urban area. The west end of the park has the highest wildlife value, and a portion of the area encompassing Pine Lake and the coastal bluffs to the west and southwest of Pine Lake has been identified as a candidate for inclusion in the Significant Natural Areas Program by the San Francisco Recreation and Parks Department. The combination of the lake, emergent vegetation, remnant coastal scrub vegetation, and tree canopy at the western end of the park provide support, substantial cover and foraging and breeding habitat for wildlife. For example, eucalyptus and other flowering plants provide foraging habitat for the many hummingbirds that use the area. Stern Grove Pine Lake Park also provides breeding, wintering, and migratory stopover habitat for many species of birds. Therefore, wildlife use is heavier than expected from an urban park. The presence of several unleashed dogs and the probable presence of neighborhood or feral cats reduces the habitat value of the park for ground nesting birds and small mammals.

B. Recommended Habitat Improvements - Lake and Water Features

PINE LAKE

Vegetation Resources. Several recommendations are proposed to improve the quality and quantity of vegetation resources in and adjacent to Pine Lake. Recommended vegetation improvements are intended to:

- Increase the amount and quality of open water habitat within the lake for migratory waterfowl by controlling water primrose (as described below under "Invasive Species Control");
- establish a vegetated buffer between visitors and the lake's edge;
- enhance vegetation on the lake's edge for wildlife forage and cover values; and
- enhance existing riparian habitat west of Pine Lake and create new riparian habitat east of Pine Lake.

These proposed improvements are described in more detail below.

Enhance and Maintain Open Water Habitat. This proposed enhancement is described in more detail in the section entitled "Invasive Species Control." The objective of this enhancement is to reduce (but not eliminate) the amount of water primrose and tules that cover the lake's surface (especially during summer months). Reduction of vegetative cover would be accomplished through periodic mechanical removal (i.e., "mowing" or chemical treatment approximately every 5 years) and through planned lake improvements (i.e., removal of sediments and/or deepening of the lake). Increasing the amount of open water habitat is expected to attract waterfowl to the lake, improve water quality, and increase the aesthetics of the lake.

Establish Vegetated Buffers. At present, visitors can access most of the lake's edge through existing trails and unpaved "social" trails. To enhance wildlife habitat quality, we recommend controlling visitor (and pet) access to the lake edge along most of the length of the lake by installing a buffer of native vegetation that provides forage and shelter to wildlife species, as well as aesthetic values to park visitors. Reducing visitor access to the lake will help discourage duck feeding and should reduce introductions of nonnative fish and turtles by park visitors. Further, limiting visitor access will reduce bank erosion, damage to vegetation, and disruption of wildlife activities. If this recommendation were

implemented, a vegetated buffer of primarily native plant species would be installed between the lake's edge and the trail system. A variety of low-growing native shrubs, herbaceous vegetation, and small trees would be installed in a naturalistic pattern. Plants would be selected that provide both forage and shelter to wildlife species, and are aesthetically pleasing to park visitors. As described elsewhere in this report, a low temporary fence is planned as part of the lake improvement to allow vegetation to become established. The vegetated buffers may also be used to screen the fence. A list of native plants that could be used as a vegetative buffer for lake screening is included as Appendix A.

Enhance the Lake Edge. In addition to buffering the lake from visitor trespass, the area around the lake should be further enhanced at the water-land interface. This area should be planted with native hydrophytic (water-loving) vegetation that also provides high quality forage specifically for migratory waterfowl. In addition, turtle basking sites, aestivation areas, and cover should be created to encourage occupation of the lake by western pond turtle, a species of special concern. A list of native plants that could be used to enhance the lake edge is included as Appendix A.

Increase Riparian Habitat. There is some existing fragmented riparian habitat consisting mostly of willows and blackberry brambles located along the western edge of Pine Lake. Because this habitat is important to resident and migratory wildlife in the park, the fragmented riparian habitat should be enhanced and restored through selective in-fill plantings of native riparian species. In addition, planned improvements to Pine Lake include creating riparian habitat in the upslope drainage located east of Pine Lake. These planned improvements provide an excellent opportunity to increase the overall amount of riparian vegetation in the park and, along with selected restoration of the fragmented riparian areas to the west of Pine Lake, would create a large riparian habitat corridor for dependent songbirds and other migratory bird species, and common wildlife species.

We recommend that the fragmented riparian habitat be enhanced through selective in-fill plantings with native riparian species, and that a new riparian area be created along the drainage leading into the eastern end of Pine Lake to form a large, contiguous riparian corridor. A list of native plants that could be used to enhance the riparian habitat corridor is included as Appendix A.

Wildlife and Fish Resources. Nonnative fish (e.g., carp and goldfish) and turtles (red-eared sliders) are reported from Pine Lake. As with other waterbodies in San Francisco Parks, the presence of these nonnative species has degraded the quality of the habitat within Pine Lake for native species such as western pond turtle, three-spine stickleback, crayfish and migratory waterfowl.

The presence of nonnative turtle populations within the Park are thought to influence the potential for occurrence of the native western pond turtle, a species of special concern. Turtle population density and overall turtle species composition are thought to be heavily influenced by the following factors:

- Number and availability of suitable basking sites, upland aestivation and nesting sites, and sheltered upland areas.

- introduction of turtles (i.e., red-eared slider, Florida redbelly, soft shell turtles) by park visitors, increasing population levels to at, or above carrying capacity of the lake;
- territorial competition by turtles for habitat (especially basking sites) resulting in injured and diseased turtles;
- competition for food by other turtles species and by fish. (Fish species such as carp and

koi are bottom feeders that remove aquatic vegetation and stir up the lake bottoms, effectively reducing or eliminating plants and associated aquatic invertebrates that are utilized by turtles);

- predation on young turtles and turtle eggs by native and non-native species, including great blue herons, great egrets, black-crowned night herons, gulls, bullfrogs, opossums, striped skunks, and dogs;
- diseases related to overcrowding and poor water quality. (Note: Diseases can spread quickly in turtles inhabiting enclosed environments (Breen 1974);
- human disturbance in aquatic habitats and in nesting areas; and
- habitat limitations due to lack of suitable basking sites, upland aestivation and nesting sites, and sheltered upland areas.

Carp and koi compete directly and indirectly with migratory waterfowl and turtles for food and habitat. Fish also directly influence the abundance and species composition of invertebrates and aquatic plants by consuming plant materials that provide habitat to invertebrates, and by negatively affecting water quality. Ducklings and nesting hens are highly dependent on invertebrates and their selection of habitats is strongly correlated with invertebrate availability (Krapu 1974, Krull 1970, Parker et al. 1992). Invertebrates may also be important to waterfowl during nutritionally demanding periods such as molt and migration. Research has shown that ducklings forage longer, move more, and rested less on ponds with low invertebrate densities than those with high invertebrate densities, which increases risk of predation and lowers duckling survival (Phillips and Wright 1993).

Other bird species that are dependent on aquatic invertebrates are also negatively affected by competition with fish. For example, tree swallows that nest near ponds that contain fish are known to have produced smaller and fewer eggs per clutch (Blancher and McNichol 1988). Riparian birds such as black phoebes, and yellow-breasted chats that are known to forage in Stern Grove Pine Lake Park may also be negatively affected by the competition for invertebrates. Similarly to ducks, grebes have shown increased reproductive productivity and habitat use following the total removal of fish (Anderson 1982, Giles 1994, Hanson and Butler 1994).

In addition to the effect fish have on waterfowl and other birds, fish strongly influence water quality. Carp and koi increase water turbidity due to their bottom feeding behavior. Fish increase turbidity and elevate nutrient concentrations, which can increase algal concentrations and decrease water clarity (Hanson and Butler 1994, Meijer et al. 1990). The effects of fish foraging (which stirs up bottom nutrients), coupled with elevated fertilization from both fish and waterfowl feces leads to rapid eutrophication. Eutrophication is the increase of nutrients in lakes by either natural or artificial processes. Eutrophication leads to increases in algal populations and turbidity, and reduces oxygen levels. Eutrophication is accelerated in the absence of good water circulation, which is the current situation at Pine Lake. These factors limit plant growth, especially submerged aquatic macrophytes. Loss of submerged macrophytes is detrimental to waterfowl, which feed both on plants and associated invertebrates (Krull 1970, Hanson and Butler 1994).

The following recommendations are similar to those that the Department and Fish and Game has recommended for other lakes in Golden Gate Park, therefore it is likely that planned improvements at Stern Grove Pine Lake Park would, as a condition of the environmental permits, require

implementation of one or more of the following:

Public Education about Non-Native Species and Duck Feeding. Signs should be posted educating park visitors about the need for controlling nonnative fish and turtle populations in the lake. The signs should further prohibit introduction of these nonnative species into Pine Lake.

Feeding waterfowl in parks has a long history and tradition. However, as described below feeding waterfowl can be detrimental to waterfowl and to the public. Food sources, such as bread, popcorn, and large quantities of cereal grains are unnatural and unhealthy foods for wild ducks. For example, public feeding of ducks has increased the resident duck population in Golden Gate Park to a level that may no longer be supported by natural food sources alone. Further, migratory ducks are likely to stay longer when fed than they would have naturally due to the abundance of unnatural food sources. Longer stays by wild migratory ducks increases the length of contact with resident ducks, thus increasing the risk of exposure to diseases. Many migratory ducks that stop over at the park during fall and winter run the risk of being exposed to density-dependent avian diseases (e.g. avian cholera and avian botulism) that may be caused by local overpopulation levels.

For these reasons, we recommend that waterfowl feeding by the public should be discouraged during the fall and winter migratory period, from October to February. A sign with suggested text and graphics is presented as Appendix B.

Invasive Plant Species
Water primrose (Ludwigia palustris, L. spp.), an invasive aquatic plant first appeared in Pine Lake approximately 9 years ago. It reportedly spread across the surface of the lagoon, often covering the entire surface of the lagoon during summer months. In the absence of active control, water primrose is expected to continue to spread out across the lake's surface. The invasion of this plant reduces the amount of open water habitat for migratory waterfowl, and therefore is a limiting factor for waterfowl habitat at the site. Further, because of its density, aquatic vegetation can substantially reduce water quality in a waterbody as it dies and decomposes. We recommend that water primrose control, similar to the control that was conducted in 1996, should be conducted every 5 years. More information on the methods and timing for invasive species control is provided in Section E below.

Likewise, tules have established in Pine Lake. This species will typically expand as Pine Lake continues to accumulate silt, resulting in a gradual spread of tules from a few clusters along the lake edge, to a contigous band of tules along the shoreline, possibly covering the lake's surface completely over time. To reduce the ability of tules to spread, we recommend increasing the lake depth to approximately 6 feet through a combination of removing accumulated silt and/or raising the edges of Pine Lake, or both. A depth of 6 feet is widely recognized as a depth at which tules are not able to survive, therfore deepening or removal of sediments to create water depths of 6 feet or more can effectively contain the spread of tules. If such a depth cannot be achieved in Pine Lake, we recommend removal of tules every 3 to 5 years using an aquatic harvester.

FISH POND (AT TROCADERO)

Vegetation Resources. The Fish Pond (at Trocadero) is an unvegetated artificial water feature with a concrete and asphalt base, therefore no recommendations are provided for enhancing the vegetation component of this water feature. The pond is periodically drained and cleaned by hand. It is recommended that ongoing maintenance continue in this area.

Wildlife and Fish Resources. The Fish Pond (at Trocadero) is an unvegetated pond with a concrete and asphalt base that is periodically drained and cleaned by hand. Based on this information, the nonnative goldfish within the pond have a seasonal life expectancy, as lack of food, poor circulation, seasonal flushing, aeration and/or predatory influence are all factors in this scenario. Periodic draining and cleaning of the pond should continue.

C. Recommended Habitat Improvements - Forest and Meadow Areas

VEGETATION RESOURCES

Stern Grove Pine Lake Park is a typical urban park that supports primarily landscape species of trees and shrubs, as well as extensive lawn areas. Continued planting and maintenance of these ornamental landscape species is appropriate for most of the forest and meadow areas, especially areas that are heavily used by park visitors. However, in portions of the park that are not heavily used by visitors and in areas that support remnant native vegetation (i.e., coastal scrub vegetation west and southwest of Pine Lake, and some riparian vegetation west of Pine Lake), it is appropriate to include native trees and shrubs in future park maintenance and planting activities. In general, selective planting of native trees and shrubs in such areas of Stern Grove Pine Lake Park would enhance the aesthetic and wildlife values of the park. Planting additional flowering plants and shrubs would attract more wildlife such as butterflies, moths and hummingbirds.

We further recommend some additional focused plantings in areas of the park that provide important movement corridors or forage and cover areas for wildlife and bird species. For example, the landscaped forest area north of Pine Lake supports primarily blue gum with little or no understory layer. Limited thinning of a portion of the blue gum in this area, together with selected understory planting of native shrubs that provide wildlife cover and forage values (e.g. toyon, elderberry, wild rose) would greatly increase the habitat values of this area to dependent wildlife species. Similarly, increased riparian and coastal scrub vegetation would improve forage and cover areas for migratory songbirds and common wildlife species, and may reduce predation by feral animals. A list of appropriate native plants for use in forest and meadow upland areas of the park are included in Appendix A.

WILDLIFE RESOURCES

Stern Grove Pine Lake Park provides important upland habitat values for wildlife species. In particular, migratory songbirds utilize upland areas of the park, especially during fall and summer. Several species of birds nest in the park and the nests are provided protection under the federal Migratory Bird Treaty Act. Future park activiites should seek to avoid disturbing active nesting areas such as dense shrubs that are utilized by migratory songbirds. If vegetation removal or other activities that could disturb bird nests are undertaken, such activities should be scheduled outside the bird nesting period (i.e. such activities should be conducted outside the nesting period, defined as from mid-August to late December). Likewise, activities that may disturb common wildlife species such as racoons and skunks should be scheduled in late summer (i.e. August to November), after these species have finished denning and rearing young, and when the young of the year are mobile.

The majority of the park's upland vegetation is comprised of cultivated landscape species, and therefore, changes to the vegetation are not in and of themselves regulated or controlled. However, vegetation removal may result in impacts on wildlife resources or on the aesthetic quality of the park. We

suggest that future park activities include some vegetation enhancements, as possible during the routine course of ongoing park landscaping activities. The following general recommendations are included for Stern Grove and Pine Lake Park:

- To the extent possible, incorporate native forage and shelter plantings into revegetation and replanting activities;
- Manage the landscaped forest to maintain a multi-age, structurally diverse forest; and
- Maintain native plant species, including native oaks and winter-bearing nectar and fruit-producing trees, and where possible, expand native plantings to enhance existing habitats.

A list of native plants that provide habitat for wildlife species for use in forest and meadow upland areas of the park are included in Appendix A.

Invasive Plant Species Control

The park supports several species of invasive nonnative plants, including: German ivy (Delora odorata or Senecio mikanioides), English ivy (Hedera helix), periwinkle (Vinca major), and French broom (Genista monspessulana). These species, if left untreated over time, may displace or overgrow more desireable landscape plants. Future park activities should include a control program to eliminate nonnative invasive plant species (described in more detail below).

D. Conceptual Park Planting and Enhancement Plan

PINE LAKE

We recommend two types of planting areas be installed between the pedestrian path and the edge of Pine Lake: a vegetative buffer from the edge of the trail to approximately the high water mark of the lake, and a lake edge planting area from the high water mark of Pine Lake to the water's edge. We also recommend enhancing and enlarging riparian vegetation to the west and east of Pine Lake.

Vegetative Buffer. The vegetative buffer is intended to provide an aesthetically pleasing buffer to separate park visitors from the lake's edge, discouraging tresspass and minimizing access to the lake's edge while allowing vistors to enjoy vistas of the lake. The lake edge buffer should include one or more of the following species:

Shrubs and small trees

- Coyote Bush (Baccharis pilularis)
- Native willows (Salix laevigata, S. lasiolepis, S. lasiandra)
- Scrub oak (Quercus agrifolia)
- Monkey flower (Mimulus auranticus)
- Blue elderberry (Sambucus mexicanus)
- Current (Ribes menziesii)

Forbs and grasses

- Wood mint (Stachys ajugoides)
- California bee plant (Scrophularia californica)
- California buttercup (Ranunculus californicus)
- Brome (Bromus carinatus ssp. carinatus or ssp. maritimus)
- Potentilla (Potentilla glandulosa)
- Seaside daisy (Erigeron glaucus)
- Blue wildrye (Elymus glaucus)
- Douglas's iris (Iris douglasii)

Lake Edge. The edge of Pine Lake, from approximately the water's edge to the high water mark should be planted with hydrophytic (water-loving) plants that provide protein-rich forage for waterfowl and cover for turtles. This area should be planted with herbaceous vegetation to allow turtles to pass from the water to the uplands unimpeded. The lake edge should be planted with one or more of the following:

Hydrophytic forbs

- Swamp knotweed (Polygonum amphibium var. emersum)
- Spikerushes (Eleocharis spp.)
- Juncus (Juncus balticus, J. effuses var. brunneus, J. iesuerii)

- Pacific rush (Juncus effusus var. pacificus)
- Barbara sedge (Carex barbarae)
- Mugwort (Artemisia douglasiana)
- Horsetails (Equisetum arvense)
- Monkeyflower (Mimulus guttatus)
- Carex (Carex spp.)

Riparian Areas. The following tree, shrub, vine, and herbaceous species can be used to in-fill the existing fragmented riparian area west of Pine Lake, and to create additional riaprian habitat in the drainage east of Pine Lake. One or more of the following species should be planted in riparian areas:

Shrubs and small trees
- Native willows (Salix laevigata, S. lasiolepis, S. lasiandra)
- Buckeye (Aesculus californica)
- Red alder (Alnus rubra)
- Dogwood (Cornus sericea ssp. occidentalis)
- Wax myrtle (Myrica californica)
- Snowberry (Symphoricarpos albus var. laevigatus)
- Blue elderberry (Sambucus mexicanus)
- California blackberry (Rubus ursinus)
- California wild rose (Rosa californica)

Vines, forbs, and grasses
- Dutchman's pipevine (Aristolochia californica)
- Wood mint (Stachys ajugoides)
- California bee plant (Scrophularia californica)
- Potentilla (Potentilla glandulosa)
- Blue wildrye (Elymus glaucus)
- Pacific rush (Juncus effusus var. pacificus)
- Manroot (Marah fabaceus)
- Barbara sedge (Carex barbarae)
- Mugwort (Artemisia douglasiana)
- Carex (Carex spp.)

FOREST AND MEADOW AREAS
As park projects remove selected landscape trees and shrubs, we are recommending replacement of these landscape specimens with native plants. We are also recommending some selective thinning of blue gum in the forested areas north of Pine Lake, an area that is recognized to have high songbird use but low forest diversity. The following trees and shrubs are recommended for use in selective in-fill planting of forest areas:

Trees
- Native willows (Salix laevigata, S. lasiolepis, S. lasiandra)
- California bay-laurel (Umbellularia californica)
- Dwarf horse chestnut (Aesculus californicus)
- Madrone (Arbutus menziesii)
- Toyon (Heteromeles arbutifolia)
- Wax myrtle (Myrica californica)
- Blue elderberry (Sambucus mexicanus)
- Coast live oak (Quercus agrifolia)
- Canyon live oak (Quercus chrysolepis)

Shrubs
- Current (Ribes menziesii)
- Bush monkeyflower (Diplacus aurantiacus)
- Coffeeberry (Rhamnus californicus)
- California blackberry (Rubus ursinus)
- California wild rose (Rosa californica)

E. Invasive Species Control and Remediation Plan

GOALS AND OBJECTIVES
The goal of the Invasive Species Control and Remediation Plan is to achieve sustained control of the invasive plant and wildlife species present in Stern Grove Pine Lake Park over time. Sustained control of nonnative plants and wildlife in Stern Grove Pine Lake Park will likely require an initial intensive removal activity, a public education program, and a low-intensity periodic maintenance program.

PINE LAKE

Control Nonnative Turtles
A biologist familiar with reptiles, and in particular with turtle

identification and behavior should trap, identify, and remove of nonnative turtles in accordance with Department of Fish and Game procedures. Turtles will be identified to species, and assessed for health and vigor. The biologist will then contact Animal Care and Control as per City and County notification requirements to allow the public to claim any escaped pet turtles. After the 72-hour notification, turtles that are not claimed will be relocated to a Department of Fish and Game-approved turtle adoption agency. In the case of diseased or pest species (i.e. : such as the snapping turtle that are on the Department of Fish and Game's list of pest species), these turtles should be disposed of in a humane manner. It is recommended that turtle control measures be conducted every 3 to 5 years.

Control Invasive Plant Species
Aquatic vegetation should be assessed annually, with the goal of maintaining at least 50% of the lake's surface as unvegetated open water habitat. When aquatic vegetation exceeds this 50% threshhold, vegetation removal should be conducted. Vegetation removal should be conducted using non-chemical methods. Aquatic vegetation, including tules, cattails, and water primrose can be removed either by hand using rakes, hoes, or similar hand equipment, or by using an aquatic harvester. We anticipate that aquatic vegetation removal will be required every 3 to 5 years, depending on climatic conditions and on the depth of Pine Lake.

FOREST AND MEADOW AREAS
We recommend that the City implement an invasive plant control program·(as funding is available). Priority should be given to designated Significant Natural Areas to the west and southwest of Pine Lake because these areas support the most sensitive biological resources in the park. A parkwide invasive plant control program should be implemented with the objective of achieving sustained control of invasive plant species, including German ivy, English ivy, periwinkle, and French broom. Effective treatment of these species involves hand removal and/or limited mechanical treatment (brushcutting, mowing) followed by herbicide application (typically either Garlon or Rodeo), depending on the target species, the size of the infestation, and the timing of application. If herbicides are used to control weeds, a certified herbicide/pesticide applicator should apply the herbicides according to manufacturer's specifications. We anticipate an intensive removal effort will be required in the first year, with sucessively less intensive efforts required in subsequent years. Continuous removal activities will be required every 1 to 3 years in order to eliminate mature weed re-sprouts, seedlings, and new "pioneer" weed infestations.

In the absence of adequate funding for the park staff to implement this program, the park may wish to obtain assistance from volunteers. Groups such as the Audubon Society, California Native Plant Society, Neighborhood Associations, or similar groups and organizations can provide needed support to accomplish native plant control at a greatly reduced cost. Yearly evaluation of invasive species will identify "problem areas" and invasions of new exotic species which should be targeted in the yearly maintenance program. After the yearly evaluation, City/County employees, or a contractor, should hand or mechanically pull re-sprouts and new invasions of invasive species.

F. Regulatory Requirements

WETLANDS
Because Pine Lake is a naturally occurring waterway, activities within the high water mark of the lake, or activities that could result in changes to the duration, timing, or amount of flow into the lake may be subject to regulation pursuant to Section 404 of the Clean Water Act. Prior to undertaking activities within this water body, including any rehabilitation of Pine Lake, a

determination of the regulatory jurisdiction of the water body will be required. If Pine Lake is determined by the regulatory agencies to be jurisdictional, a permit or agreement may be required prior to undertaking the activity.

Regulatory agencies that may have some jurisdiction over Pine Lake include the Regional Water Quality Control Board, the California Department of Fish and Game, and the U.S. Army Corps of Engineers. The following types of environmental permits and agreements may be applicable to work in or near Pine Lake:

- A Section 401 Water Quality Certification from the Regional Water Quality Control Board,
- A Section 1600 Streambed Alteration agreement from the Department of Fish and Game, and/or
- A Section 404 Clean Water Act permit from the U.S. Army Corps of Engineers.

Informal interviews with the regulatory agencies should be conducted after planned park improvements are identified to determine the agency jurisdiction and the extent of the permit requirements related to proposed park improvements.

On similar projects performed for the rehabilitation of the lakes in Golden Gate Park, the Department and Fish and Game required the City to obtain and comply with a Section 1600 Streambed Alteration agreement. This agreement required the City to remove and dispose of nonnative fish and turtles; restrict tree removal and other construction activities to the non-breeding season (mid August to late December); and conduct a public education program to reduce duck feeding and prohibit introduction of nonnative fish and turtles into park lakes.

COMMON WILDLIFE SPECIES

Common wildlife that may be affected by the project (e.g., nonnative turtles, fish, raccoons, opossums) would be protected under the state Department of Fish and Game Code relating to harvest, confinement, destruction, importation, transportation and possession restrictions (California Code of Regulations, Title 14, Natural Resources, Sections 2189 to 2192 and 671, dated August 1, 1999).

As described above, the project will likely require a Section 1600 Streambed Alteration Permit from the California Department of Fish and Game. Protections for common wildlife, and procedures for removal and disposal would likely be addressed in the terms and conditions of that permit.

MIGRATORY BIRDS

Migratory birds, including songbirds, raptors, and waterfowl are protected under state Fish and Game Codes and under the federal Migratory Bird Treaty Act (16 USC 703-711). At present, there are no known active raptor nests within the park, but the park does provide suitable tree and snag habitat for nesting as well as foraging areas (e.g., open meadows). If raptors decide to nest in the park in the future, the nests would be considered protected until after the young have fledged and left the nest. Activities that disrupt breeding or disturb active raptor nests would be subject to regulation by the Department of Fish and Game. The Department of Fish and Game typically requires projects to work outside the raptor-nesting period (March 15th to August 15th), to conduct preconstruction raptor nest surveys, and to establish no-work zones around active nests until after the young of the year have left the nest. Likewise, other bird nests are provided some protection that typically results in a requirement to limit construction to the non-breeding season (for hummingbirds and other non-raptor species, this period is from April 15th to February 15th).

G. Citations

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H. Appendices

APPENDIX A. RECOMMENDED NATIVE PLANTS FOR USE AT PINE LAKE/STERN GROVE PARK

Shrubs and small trees

- Native willows (Salix lucida ssp lasiandra, S. lasiolepis, S. scouleriana)
- Scrub oak (Quercus agrifolia)
- Blue elderberry (Sambucus mexicanus)
- Current (Ribes sanguineum var. glutinosum)

Forbs and grasses

- Yarrow (Achillea millefolium)
- Wood mint (Stachys ajugoides)
- California bee plant (Scrophularia californica)
- Gumplant (Grindelia maritima)
- California buttercup (Ranunculus californicus)
- Potentilla (Potentilla glandulosa)
- Blue wildrye (Elymus glaucus)
- Douglas's iris (Iris douglasii)

PINE LAKE- LAKE EDGE

Hydrophytic forbs

- Swamp knotweed (Polygonum amphibium)
- Spikerushes (Eleocharis spp.)
- Narrow-leaved pondweed (Potamogeton pectinatus)
- Rush (Juncus effusus var. brunneus, J. patens)
- Iris leaved juncus (Juncus xiphioides)
- Barbara sedge (Carex barbarae)
- Mugwort (Artemisia douglasiana)
- Horsetails (Equisetum spp.)
- Monkeyflower (Mimulus guttatus)
- Carex (Carex spp.)

PINE LAKE- RIPARIAN AREA

Shrubs and small trees

- Native willows (Salix lucida ssp lasiandra, S. lasiolepis, S. scouleriana)
- California bay-laurel (Umbelluria californica)

- Buttonwillow (Cephalanthus occidentalis)
- Dogwood (Cornus sericea ssp. occidentalis)
- Red alder (Alnus rubra)
- Blue elderberry (Sambucus mexicanus)
- California blackberry (Rubus ursinus)
- California wild rose (Rosa californica)

Vines, forbs, and grasses

- Wood mint (Stachys ajugoides)
- California bee plant (Scrophularia californica)
- Potentilla (Potentilla glandulosa)
- Blue wildrye (Elymus glaucus)
- Pacific rush (Juncus effusus var. pacificus)
- Iris leaved juncus (Juncus xiphioides)
- Barbara sedge (Carex barbarae)
- Mugwort (Artemisia douglasiana)
- Carex (Carex spp.)

STERN GROVE- FOREST AND MEADOW AREAS

Trees

- Native willows (Salix lucida ssp lasiandra, S. lasiolepis, S. scouleriana)
- California bay-laurel (Umbelluria californica)
- Dwarf horse chestnut (Aesculus californicus)
- Madrone (Arbutus menziesii)
- Toyon (Heteromeles arbutifolia)
- Wax myrtle (Myrica californica)
- Blue elderberry (Sambucus mexicanus)
- Coast live oak (Quercus wislizenii)
- Canyon live oak (Quercus chrysolepis)
- Silk tassels (Garrya elliptica)

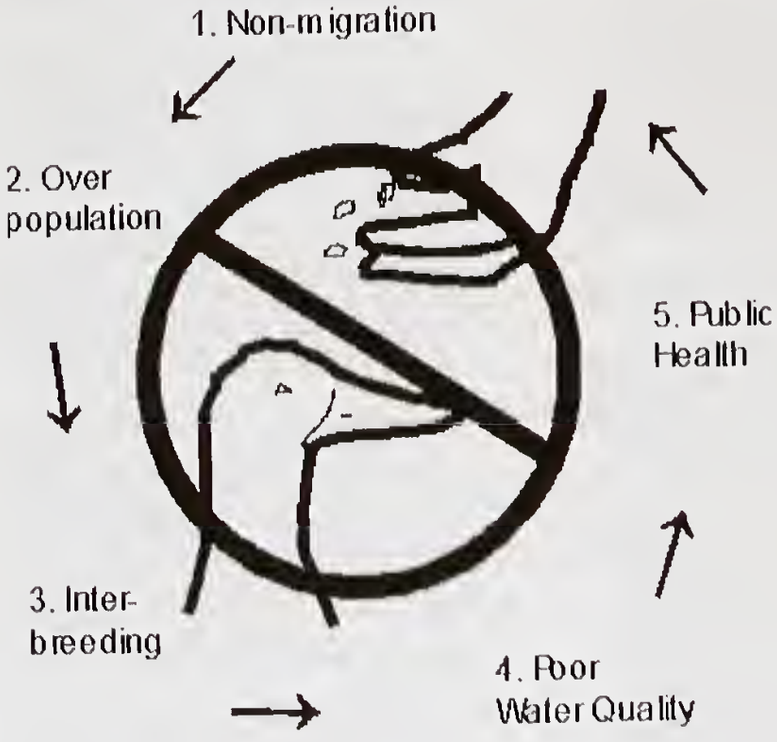
Shrubs

- Scrub oak (Quercus agrifolia)
- Coyote bush (Baccharis pilularis)
- Current (Ribes menziesii)
- Spice bush (Calycanthus occidentalis)
- Coffeeberry (Rhamnus californicus)
- California blackberry (Rubus ursinus)
- California wild rose (Rosa californica)
- Honeysuckle (Lonicera involucrata)

APPENDIX B.
SAMPLE DUCK FEEDING SIGN

Suggested sign text to discourage visitors from feeding waterfowl during migration period.

Please Do Not Feed Ducks
From October - February



Park Furnishings
(See diagram 2.6-A)

Overview

Stern Grove and Pine Lake Park offer essential furnishings, including picnic tables, benches, barbeques, drinking fountains, trash receptacles, bike racks, flagpoles, kiosk, bollards, fences, and railings, which generally lean toward the understated and utilitarian in design. The majority of furnishings and amenities do not comply with ADA guidelines for design, location and approach. Lack of accessible path of travel, physical obstacles and lack of maintenance contribute to underutilization and dereliction of some furnishings. Furnishings worth restoring or augmenting, such as the stone barbeques and a commemorative bench, are rare. Pursuing park identification and character through planned combinations of site furnishings that complement one another, while reflecting the quiet and rustic character, at best starts by replacing a majority of the existing furnishings.

General Recommendations

A. Develop a site furnishings policy and plan that specifies and prioritizes:
   1. Criteria for and types of new furnishings for all areas.
   2. Restoration and relocation of selected existing furnishings.
   3. Augmentation or replacement with accessible alternatives.
   4. Removal and phase-out.

B. Provide at high use barbeque areas a full range of furnishings and amenities such as picnic tables, benches, trash and recycling receptacles, water faucet, and drinking fountain.
C. Concentrate new furnishings at accessible sites; restore and relocate existing useable furnishings.
D. Provide alternate accessible furnishings alongside existing non-accessible features to remain; for example, fire grills next to stone barbeques.
E. Provide surface material tactually distinct from path of travel for fire grills.
F. Balance ADA guidelines with potential issues, such as accessible path of travel and environmental impact.
G. Anticipate the need for increased room to accommodate approach, clear ground and maneuvering space for accessible furnishings.
H. Provide firm, slip-resistant surface of two percent maximum slope in all directions for accessible areas. Provide hard, permanent surface material where tree duff requires regular sweeping.
I. Invest in weather, insect, corrosion, fire, and vandal resistant materials, such as high-density polyethylene (HDPE), cast aluminum, and stone.
J. Promote donations of memorial benches; create special bench groupings, as well as isolated bench locations.
K. Provide descriptive names for picnic areas to facilitate way finding.
L. Provide regulations sign for picnic and cooking; other special use areas.

Recommendations for Picnic and Social Areas – Stern Grove (6 Sites)

Fig. 2.6.1 – Stone barbeque in East Meadow

East Meadow, near 19th Avenue and Sloat entrance

A. Establish alternate barbeque and picnic area adjacent to accessible path.

B. Restore stone barbeque; add alternate pedestal grill.

C. Provide path of travel to existing and new amenities.

D. Replace tables and benches.

E. Provide trash receptacle and water faucet.

Trocadero south, in redwood grove (provide name for picnic area)

A. Replace benches.
B. Provide accessible benches and appropriate surface and slope conditions.
C. Provide path of travel to existing and new amenities.

Adjacent to Parking Lot

A. Relocate stone barbeque to new barbeque area near Pine Lake.
B. Remove all other furnishings to accommodate new Stern Grove Restroom Building.

Trocadero Outdoor Kitchen

A. Preserve double stone barbecue; add alternate pedestal grill.
B. Provide waste receptacles, water faucet.
C. Provide path of travel to existing and new amenities.

Wawona Clubhouse Picnic Patio

A. Retain existing 2 wood tables; add ADA compliant tables and benches.
B. Provide path of travel to existing and new amenities.

Concert Meadow

A. See Section 6.0 – Buildings and Structures.
B. See Section 4.0 – Recreation Areas.
C. Provide accessible route between wheelchair seating and performance areas, including stage, dressing rooms and other spaces used by performers.
D. Provide accessible drinking fountain.

Recommendations for Picnic and Social Areas – Pine Lake Park (2 Sites)

Fig. 2.6.2 – Campfire circle near Pine Lake

Head of Pine Lake Park Meadow

A. Renovate and enlarge picnic area.
B. Provide new furnishings and accessible surface.
C. Provide accessible path of travel.
D. Provide amenities for dog owners: water faucet and hose; waste receptacle, bag dispenser, marking posts.
E. Provide shelter structure with benches and post board to accommodate comprehensive dog regulation sign and announcements.

Pine Lake Barbeque Area

A. Relocate barbeque area to Campfire Circle at edge of meadow.
B. Provide accessible furnishings and path of travel.
C. Provide drinking fountain and water faucet.

Types of Furnishings

(See Sample Site Furnishings p. 2.6-5)

Benches

A. Designate and provide distinctive bench style for various types of areas:
   - Major accessible and multi-use paths. Provide benches with backs and armrests at regular intervals and at ends of path section.
   - Picnic and barbeque areas.
   - Small and intimate seating areas (not along path).
   - Remote, single seating.
   - Memorial bench (i.e. Aurora Lynn Bench in Stern Grove redwood grove).

B. Promote memorial bench donations.
C. Design and locate a special seating area with a circle of benches, memorial type or others.
D. Locate benches in alcoves, paved with hard, permanent material, off path of travel.

Tables

Select rust, insect, corrosion, fire, crack resistant materials that facilitate self-cleaning and graffiti removal, such as:

- Heat-fused, plastic-coated welded steel mesh.
- High quality powder coating over metal frames.
- High-density polyethylene table and bench slats.
- Diversify social seating by choice of table shapes: round, square, octagonal.

Drinking Fountains

A. Provide an ADA complying drinking fountain at major use areas:
   Concert Meadow
   Children's Playground
   Tennis Courts
   Wawona Clubhouse Picnic Area
   Pine Lake Picnic Area by parking lot
   Pine Lake Barbeque Area
   Pine Lake Field House (new)
   In restroom vicinity
B. Provide adequate space and surface for access and maneuvering.

Bike Racks

A. Promote bicycling to parks by increasing convenient bike parking facilities.
B. Locate bike racks in highly visible areas, near parking lots and selected major use areas, in clusters for 16 bikes maximum for easier detection of thieves.
C. Provide fenced valet parking at special events to encourage alternate transit, reduce impact to trees, posts and impediments to pathways.
D. Provide clear approach to and generous overhang space to eliminate intrusion into path of travel, parked cars and facilities.

Trash Receptacles

A. Provide trash and recycling receptacles at approach to major use areas:
   Concert Meadow
   Children's Playground
   Tennis Courts
   Wawona Clubhouse Picnic Area
   Pine Lake Picnic Area by parking lot
   Pine Lake Barbeque Area
   Pine Lake Field House (new)
   In restroom vicinity
B. Paint existing 30-gallon drum receptacle in color to match new furnishings; stencil park logo.
C. Alternatively, provide plastic-coated, welded wire receptacles for sturdy, yet contemporary look.
D. Establish recycling receptacles for convenient deposit and pick-up.

Fences, Gates, Railings, Headers and Bollards

A. Maintain and restore chain link fence around perimeter and selected active use areas.
B. Shroud chain link fence with vegetation for wind and view protection.
C. Provide consistent type of metal vehicular gate or paint existing gates in uniform color.
D. Resume use of rustic log and rough-hewn rails as trail and area delineators where accessible handrails are not required.
E. Provide accessible hand and guardrails.
F. Resume use of log headers; re-align end to end to define continuous edge; remove redundant logs.
G. Replace existing assortment of bollards with prefabricated type of uniform safety color and with removable, locking capabilities.

Community Post Boards

A. Expand size of Pine Lake Meadow post board to accommodate dog regulations and other announcements; resume attachment of community-donated plastic bags for dog litter.
B. Establish a template for post boards useable throughout the park system.

C. Install post boards at other selected major use areas to consolidate special use information and promote community through announcements.

Flagpoles

A. Relocate Stern Grove entrance flagpole.
B. Maintain Trocadero flagpole with flag.

Public Phones

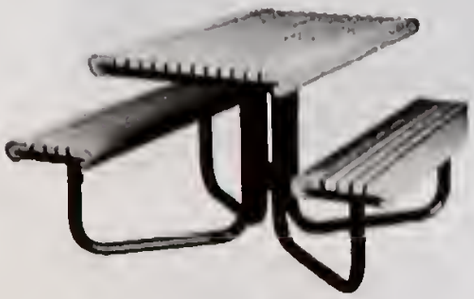
Relocate and replace public phones for full ADA compliance

Conclusion

Site furnishings make a park commodious, accent the park's character and facilitate proper usage. Although the rustic park character invites use of split logs for seating and edgings and rough-hewn logs for guardrails, they exclude use by many and should be balanced with all-serving furnishings. Contemporary, pre-fabricated furnishings provide well-designed, heavy-duty features complying with ADA guidelines and maintenance needs, and should become the backbone for the near overhaul in furnishings. Purging the park of unserviceable furnishings, augmenting it with good designs and choosing nature-complementing colors for new furnishings, rather than relying on by-products of the forest and unplanned installations, will serve well to complement the rustic nature while expanding the hospitality of the park.

Sample Site Furnishings

Model # S615
By Wabash Valley



Gretchen Picnic Table
By Landscape Forms

Model # S611
By Wabash Valley

Model # S606
By Wabash Valley

Model # 2118-6 Timberform Res
By Columbia Cascade

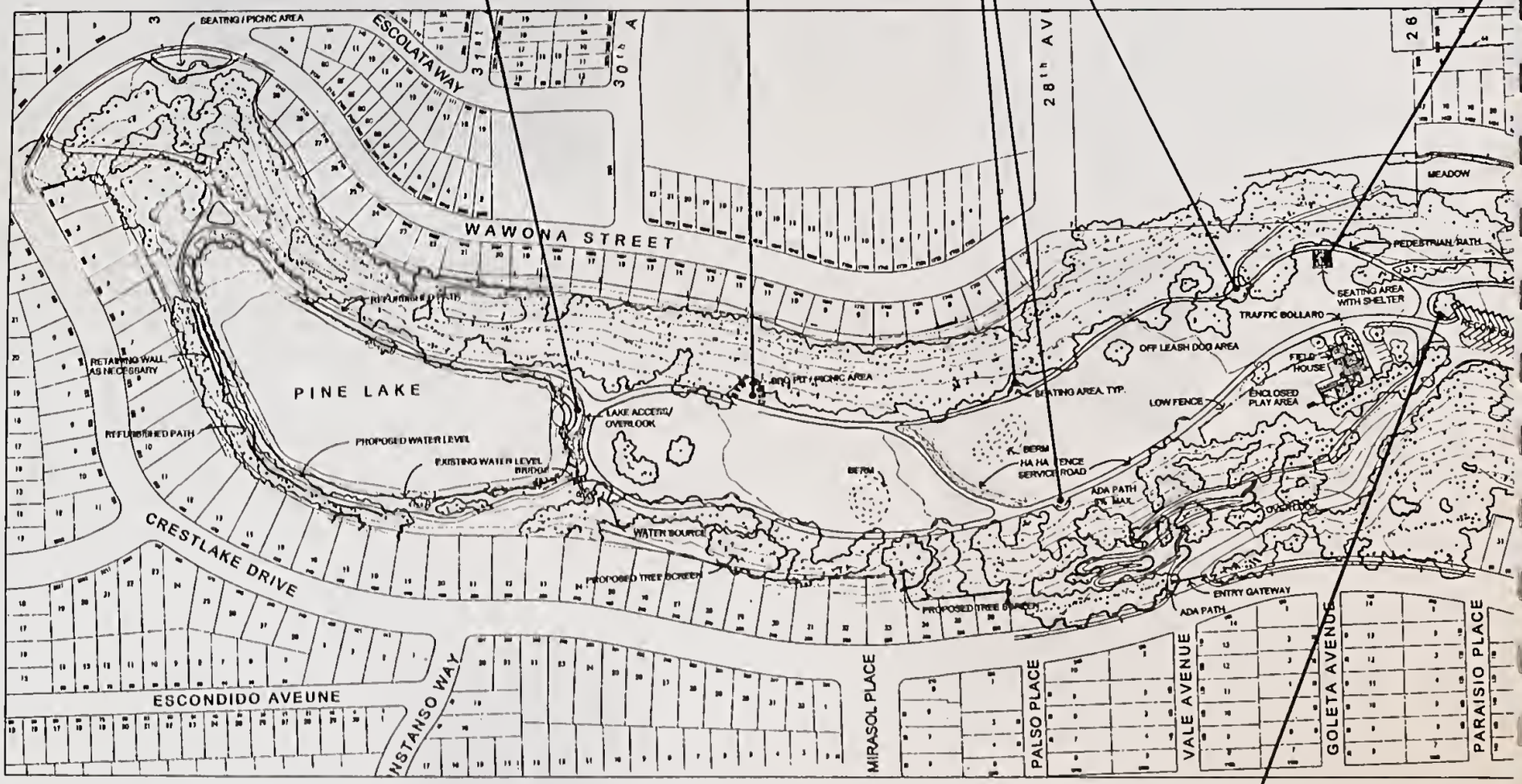
Plainwell Bench
By Landscape Forms
Designed by Robert Chipman, ASLA U.S. Patent No. D419,341

Model # LRW22/FTL22
By Wabash Valley

New seating areas, typical

Pine Lake Park Barbeque Area
- Relocated stone bbq to campfire circle
- Provide drinking fountain and water faucet
- Provide accessible furnishings
- Provide additional barbeque grills

Add benches

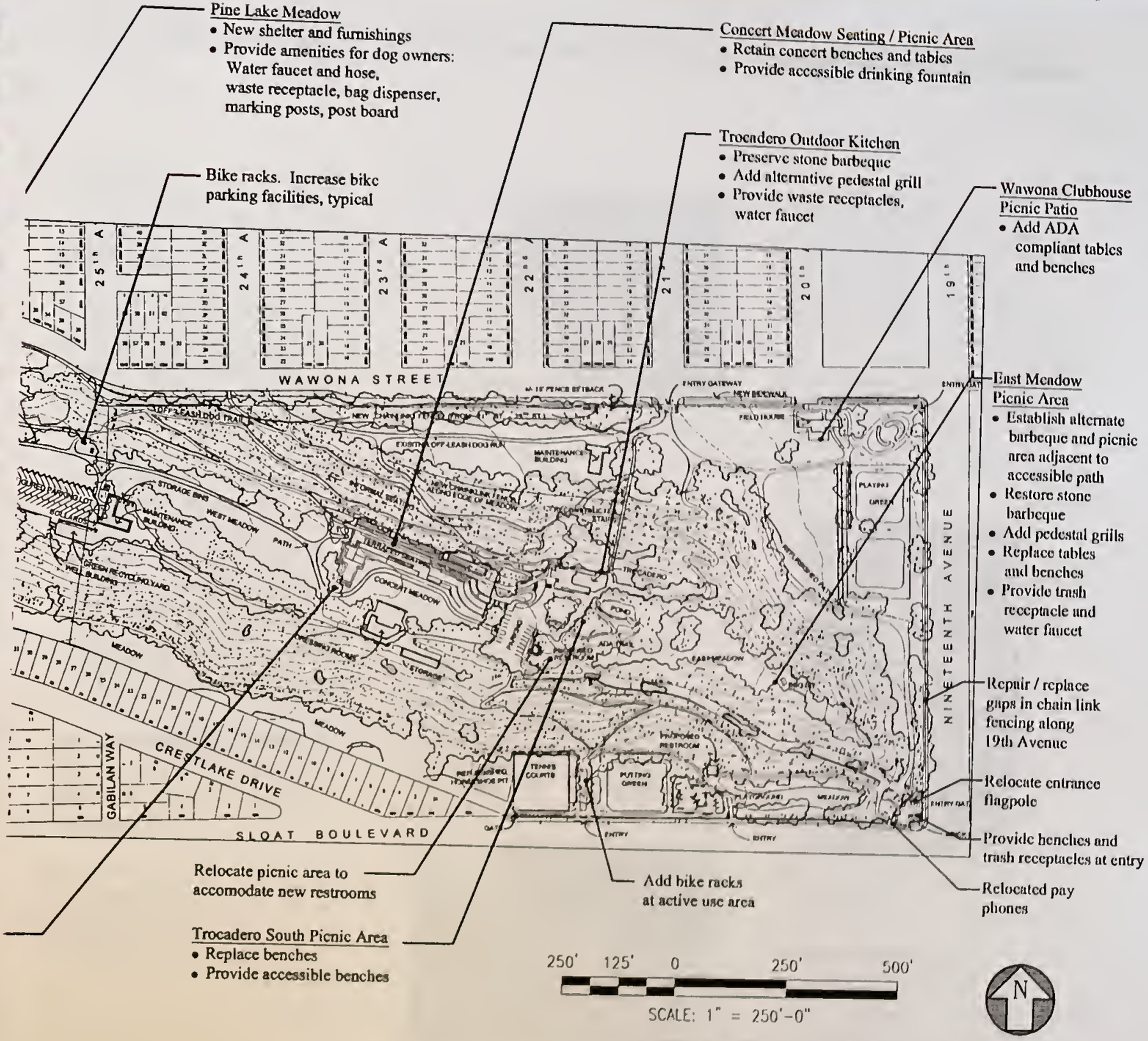


Provide trash receptacles at approach to major use areas, typical

Provide ADA complying drinking fountains at major use areas, typical

General Recommendations

Park furnishings to be replaced with consistent standard furniture. See report for more detailed information (Section 2.6).


Pine Lake Meadow
• New shelter and furnishings
• Provide amenities for dog owners: Water faucet and hose, waste receptacle, bag dispenser, marking posts, post board
Bike racks. Increase bike parking facilities, typical
Concert Meadow Seating / Picnic Area
• Retain concert benches and tables
• Provide accessible drinking fountain
Trocadero Outdoor Kitchen
• Preserve stone barbeque
• Add alternative pedestal grill
• Provide waste receptacles, water faucet
Wawona Clubhouse Picnic Patio
• Add ADA compliant tables and benches
East Meadow Picnic Area
• Establish alternate barbeque and picnic area adjacent to accessible path
• Restore stone barbeque
• Add pedestal grills
• Replace tables and benches
• Provide trash receptacle and water faucet
Repair / replace gaps in chain link fencing along 19th Avenue
Relocate entrance flagpole
Provide benches and trash receptacles at entry
Relocated pay phones
Relocate picnic area to accomodate new restrooms
Add bike racks at active use area
Trocadero South Picnic Area
• Replace benches
• Provide accessible benches
WAWONA STREET
SLOAT BOULEVARD
CRESTLAKE DRIVE
GABILAN WAY
NINETEENTH AVENUE
25TH AVE
24TH AVE
23RD AVE
22ND AVE
21ST AVE
20TH AVE
19TH AVE
CONCERT MEADOW
WEST MEADOW PATH
MAINTENANCE BUILDING
STORAGE BINS
POND
TENNIS COURTS
PUTTING GREEN
250' 125' 0 250' 500'
SCALE: 1" = 250'-0"
N

STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

Park Furnishings

SIGNAGE
(See diagram 2.7-A)

Overview

Existing Park Signage
The existing signage in Stern Grove and Pine Lake Park provides a typical, albeit undeveloped range of information from naming the park, facilities and areas of interest; describing park rules, regulations and directions; and controlling traffic and parking. Informational signage is commonly written in command form with emphasis on the prohibitive. Educative and interpretive descriptions are not utilized. Efforts of providing, displaying and locating information evolved in bits and pieces rather than as a planned environmental vision.

Park signage in the Assessment Report is separated into five categories:

Park Feature Signs,
Park Regulations,
Bay Area Ridge Trail,
Traffic and Parking, and
ADA Signage.

Fig. 2.7.1 – Typical Park Feature Sign

Park Feature Signs
Park Feature Signs announce facilities and locations of significance within the park. They are of a typical routed wood design, with white lettering on green background, and are hung from metal brackets on green metal poles. Park feature signs are fabricated and maintained by Recreation and Park Department staff. During the summer concert series, a banner announcing the Stern Grove Festival is hung at the 19th Avenue and Sloat Boulevard entrance.

Fig. 2.7.2 – Park regulation sign attached to tree

Park Regulations
Park regulation signs describe park rules, name and protect park features, indicate hours of operation, and convey public safety information. Most of the regulation signs in the park are wood with white-stenciled lettering on brown background. They are mounted in a variety of ways, mostly on trees. Park regulation signs are maintained by Recreation and Park Department staff.

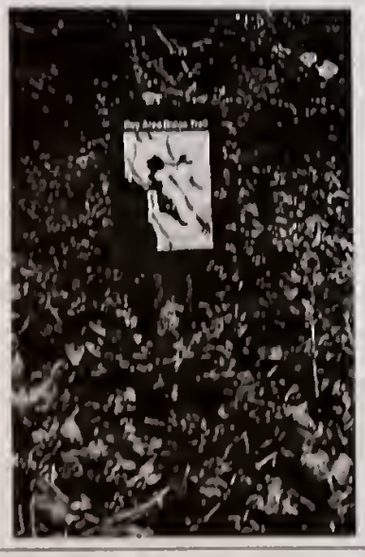


Fig. 2.7.3 – Bay Area Ridge Trail arrow plaque

Bay Area Ridge Trail
Small diagrammatic signs randomly mark the route of the Bay Area Ridge Trail through Stern Grove and Pine Lake Park. Maps mounted on posts and trees depict the trail system throughout the Bay Area, but fail to indicate the

extent of the trail through the immediate parkland. Two-inch diameter directional arrow plaques, randomly spaced, and inconspicuously displayed (or often pointing in ambiguous directions) compound the deficiencies of the current signage program.

Traffic and Parking
These signs control and regulate vehicular traffic and parking in the park. Signs are either pole mounted or painted on the ground. The Department of Parking and Traffic installs and maintains these signs on the street level of the park, while within the park, they are maintained by the Recreation and Park Department.

Additional parking-related signage is posted for performances during the summer concert season.

ADA Signage
Accessibility signage in the park is found in the parking lots at Stern Grove and Pine Lake Park. There is a designated blue parking zone at the Wawona Street entrance with a pole mounted accessibility sign. Accessibility signage is also found at the Wawona Clubhouse indicating the accessible entrance and restrooms.

ADA design standards on park signs are not used consistently.

Why Signage Improvements?

Improving signage would focus on areas that are conspicuously deficient:

A. Way finding by use of maps, exhibits, graphics, trail markers, and assigning names to picnic and barbeque areas.
B. Directional and information signs not complying with ADA.
C. Organization and consolidation of information for centralized reference, spatial efficiency and reduction of environmental distractions.

Improving signage would modify or rectify use of existing park signs to eliminate ambiguities and redundancies; and reinforce hierarchy of meaning and value of park features. For example, the pole sign with park name carved on wood plaque and framed with ornamental wrought iron holds historic value and high visual appeal. However, that this sign type marks the location of major and minor entrances alike at Stern Grove, communicates to the visitor that these entrances hold equal status. A signage plan would rectify this oversight by giving credence to visual hierarchy: a major entrance deserves a welcome-scaled and distinctively designed sign-- not the same kind used at every other entrance.

Providing a comprehensive signage plan serves to benefit visitor, park staff and the environment. For the visitor, the plan facilitates ease of navigating through parkland to one's destination, park amenities and services. For the staff, the plan helps govern the boundaries of activities and controls ad hoc sign installations. Maintenance of the park becomes more manageable and sign replacement predictable. For the environment, signage protects special areas and resources such as plantings, slopes and habitats.

Signage Improvement Recommendations

Comply with and improve guidelines set by Recreation and Parks Department Signage Manual (Site Signage only).

A. Establish distinct categories of park signage. For each category, establish specific sign types. For each sign type, establish design standards for dimensions, materials, graphics, letter type and size, finish and color, mounting and placement to develop a system of accessible, legible, aesthetic, and durable signs. Recommended categories of Park Signage are:

    1. **Identification:** park name at major entrance (custom-

designed), park name and location at minor entrance; building, facility and site name, site feature name, accessibility signs-including tactile and auditory messages

2. **Directional:** way-finding, usually with combination of name, distance to and arrow pointing to trail, roadway or park feature; trail marker; pictographs
3. **Informational:** general rules and regulations, special use (tennis, play area, dog run, lake) rules, special announcements, maps, interpretive descriptions, contacts.
4. **Traffic and Parking:** speed limit, stop signs, parking restrictions; pavement messages under auspices of Vehicle Code and installed by the Department of Parking and Traffic.
5. **Single-message advisory or warning:** For example, "No Dogs Allowed, Except on Leash."

B. **Comply with Americans with Disabilities Act of 1990 (ADA).** Remove and replace non-conforming signs. Monitor and reject non-conforming signs by other agencies sharing use of park poles and sign systems.

C. **Minimize proliferation of signposts**, thus pedestrian obstacles and visual distractions, by allowing permanent, approved signs to share space on common post. See recommendations for Bay Area Ridge Trail.

D. **Consolidate information and standardize format** for modular spaces on multi-paneled sign proposed for significant locations such as entrances and common gathering places. Establish central reference points.

E. **Rectify obvious signage deficiencies, namely:**

Replace existing under-scaled entrance sign with a conspicuous park name sign, designed to fit in with the entrance layout and with consistent with the overall rustic park character.

Provide map and guide as basis for way finding.

Provide interpretive signs and exhibits.

F. **Continue using and preserve standardized sign types,** if serviceable, to reinforce identity with Recreation and Parks Department property and maintenance.

G. **Form a committee of park planners, designers and supervisors;** citizens and environmental graphic professionals devoted to improving way finding and sign policy.

Stern Grove and Pine Lake Park Signage Master Plan

General

A. **Develop a signage master plan that conveys information** to enhance the enjoyment, knowledge and safe use of the park for visitors and personnel and sustainability of the park environment. Adopt, improve and expand upon existing department-wide sign standards. Where new information is recommended, make all efforts to classify it with existing category and associated sign type to promote consistent and uniform departmental practices.

B. **Establish written and graphic guidelines** for a comprehensive hierarchy of sign types and design standards for materials, graphics, lettering, finish and color for each type.

C. **Develop a scaled signage layout plan** with sign schedule and location of each sign type as a means to control, maintain and replace signage. Compare method of sign inventory for the Golden Gate Park Sign Survey, 1984.

D. **Rely on professional environmental graphic designers**, map designers and sign fabricators, to produce the best display of information of high legibility, durability, and design for the park system.

E. **Coordinate with and facilitate signage for special events** or other agencies whose programs utilize the park. Share common poles or mounting systems to minimize proliferation of pedestrian obstacles and environmental distractions.

F. **Monitor and encourage ADA compliance on signage** by other agencies, which share use of park poles and sign systems. See Signage Overview, Bay Area Ridge Trail.

G. **Remove and replace signs not conforming to ADA guidelines.**

H. **Provide "readable" signs by senses other than vision**, such as touch and hearing. Use raised, upper case, sans serif letters and symbols for permanent signs intended to be read by touch.

I. **Anticipate need for increased display space** resulting from consolidating information and providing viewing and maneuvering space, as required by ADA.

J. **Develop and use sign types consistently.**

Park Feature Signs. Identify buildings, facilities, special use areas, and entrances by use of two existing sign types: 1) Wood post and beam and 2) Metal pole with ornamental wrought iron around wood sign.

Remove and replace park feature signs not complying with ADA guidelines for minimum vertical clearance, character type and size; and warning or barrier.

Augment use of classic metal pole with ornamental wrought iron around wood sign as the signature Recreation and Park Department sign.

Priority Improvements

A. **Improve and expand way-finding signage.** Produce a park map and guide as the genesis and informational source of park-wide way finding signage.

Map and guide shall consist of a scaled park layout, legend, permanent circulation system of roads and paths, parking, access points, level of accessibility, facilities, and special features; park rules and regulations; and hours and important contacts. A graphically simplified form of this same map may be published as a foldable trail map.

Display maps at two scales, as appropriate, at each entrance and node:

1. Full map at half scale or scaled to fit panel, indicating visitor's present location
2. Enlarged area map indicating visitor's present location.
3. Orient "You are here" message in same direction as visitor reading the map panel.

B. **Develop trail signage as a special sign type to facilitate way finding.** Trail signs are directional signs, which typically include arrow, destination name, symbols and pictographs and other graphic messages such as multiple users and steepness or difficulty of travel.

Systematically place trail signs to direct the visitor to pathways and park features including:

1. Access and entry points, trailheads

2. Decision points along a path
3. Parking areas, restrooms, telephones
4. Trocadero Clubhouse, Children's Playground, Tennis courts
5. Meadows, Lake, Leashed Dog Area, Off-leash Dog Area

Locate trail signage at decision-making points and for maximum visibility from pathways and within reach for touch reading. Indicate direction of arrow such that no ambiguity to the visitor arises.

Utilize sign types constructed of wood or other natural materials to fit the rustic character of the park surroundings. Mount each type at a consistent height:

1. Single carved post
2. Post with carved plaque. On an accessible route, if the vertical clearance of the sign is less than 80 inches, provide a barrier to warn the blind or visually impaired. When possible, locate post off of the path surface but in reach for touch reading. Where several plaques are anticipated, designate a serviceable height and use consistently.
3. Provide additional space on a common pole to accommodate plaques belonging to other agencies and minimize obstacles.

Comply with character height, line weight, finish and contrast, as recommended by ADA.

On multi-use paths, consolidate and display various symbols in a logical order and consistent manner.

C. **Introduce Interpretive Signage.** Permanent interpretive signs presented as exhibits with text, symbols and illustrations that describe a concept, event or process and is accessible to the majority of park visitors.

Provide exhibits showing specialized degree of visual, structural and spatial organization, including:

1. Vertical rather than horizontal display format
2. Maximum readability of text by choice of letter type and size, background color contrast; layout; and use of Braille translation
3. Audible information as alternative form to visual exhibit
4. Placement to reduce glare
5. Minimum allowable maneuverability around and approach to exhibit

Provide modular, vandal and abrasion resistant, fire and fade resistant, shatterproof, and inexpensive to replace sign type. Assure to park staff the convenience of obtaining replacement materials, changing exhibits and cleaning sign system.

Provide " The Natural History of Pine Lake" Interpretive Signage
As one of San Francisco's few natural lakes, Pine Lake is a unique natural feature. Interpretive signage would describe and illustrate Pine Lake's history and environmental significance and flora and fauna supported by the lake habitat.

Provide "The Making of Stern Grove and Pine Lake Park" Interpretive Signage
Incorporate history of Stern Grove and Pine Lake as described in Sigmund Stern Grove and Pine Lake Park Site Assessment, July 2001.

D. **Plan and design a hierarchy of entrance signage to clearly identify arrival points.**

Establish major entry sign as a special sign type, which appears part and parcel of the entrance surroundings. Provide a highly visible, distinctively designed and welcoming sign harmonious

with the rustic nature of the park.

Repeat use of materials and form, scaled to level of meaning to reinforce related function. For example, if large stone columns support the signage at the major entrance, smaller stone columns at minor entrances would reinforce the idea of access point of secondary level.

If space is limited, integrate park name onto multi-paneled sign or kiosk displaying park information such as park map, regulations and contacts, special events and announcements, and accessibility. Provide adequate viewing and maneuvering space.

Preserve and protect signs with ornamental wrought iron as a standard sign type used at other entrances: Crestlake Drive and Vale Avenue, and Wawona Street and 21st Avenue. (See Section 5.0 – Special Areas/Park Entrances)

F. **Improve Park Regulation Signs**
Design a general regulation sign usable throughout the park

1. Content and Wording
2. Organize and sequence information by subject and level of importance.
3. Use consistent wording and nomenclature.
4. Delete ordinance references, which are enforceable without listing.
5. Use positive wording and educative statements that describe cause and effect, which may better, enlist the support of park users.
6. Conclude with a few lines appealing for citizen participation and titled: "Your Support" or "Volunteer for the Park".
7. Sign type and fabrication
8. Designate multi-paneled sign system to display park regulations.
9. Plan for information changes by using a flexible text system.
10. Location
11. Remove and prohibit regulation signs attached to trees.
12. Locate at arrival points and major gathering areas for optimum dissemination of information.
13. Provide viewing space from wheelchair.
14. Use ADA recommended character height and lower case to reduce overall size of regulation sign; therefore, reducing environmental distractions.
15. Design special use regulation signs
16. Conform to general regulations for content and wording and ADA letter character guidelines.
17. Provide modular mounting system for attachment to various surfaces: gates, fences, posts and other materials that structurally define special areas.
18. Provide informational signs for special areas:
    - Erosion Control/Sensitive Habitat
    - Restoration Area
    - Wildlife Area
    - Dog Play Area
    - Play Area
    - Lake Area
    - Croquet Area
    - Parking

G. **Bay Area Ridge Trail**
Remove and relocate Bay Area Ridge Trail signs that mislead the visitor and deface trees.

Encourage compliance to ADA signage guidelines.

Require sharing common park post trail marker to show ridge trail location within the park.

H. **Traffic and Parking**
Provide additional traffic control signage to clearly indicate entry into the park, speed limits and vehicle controls, special event vehicle restrictions, and caution to drivers when pedestrians share roadways.

I. **Comply with ADA Signage Guidelines**
Remove and replace non-complying signs.

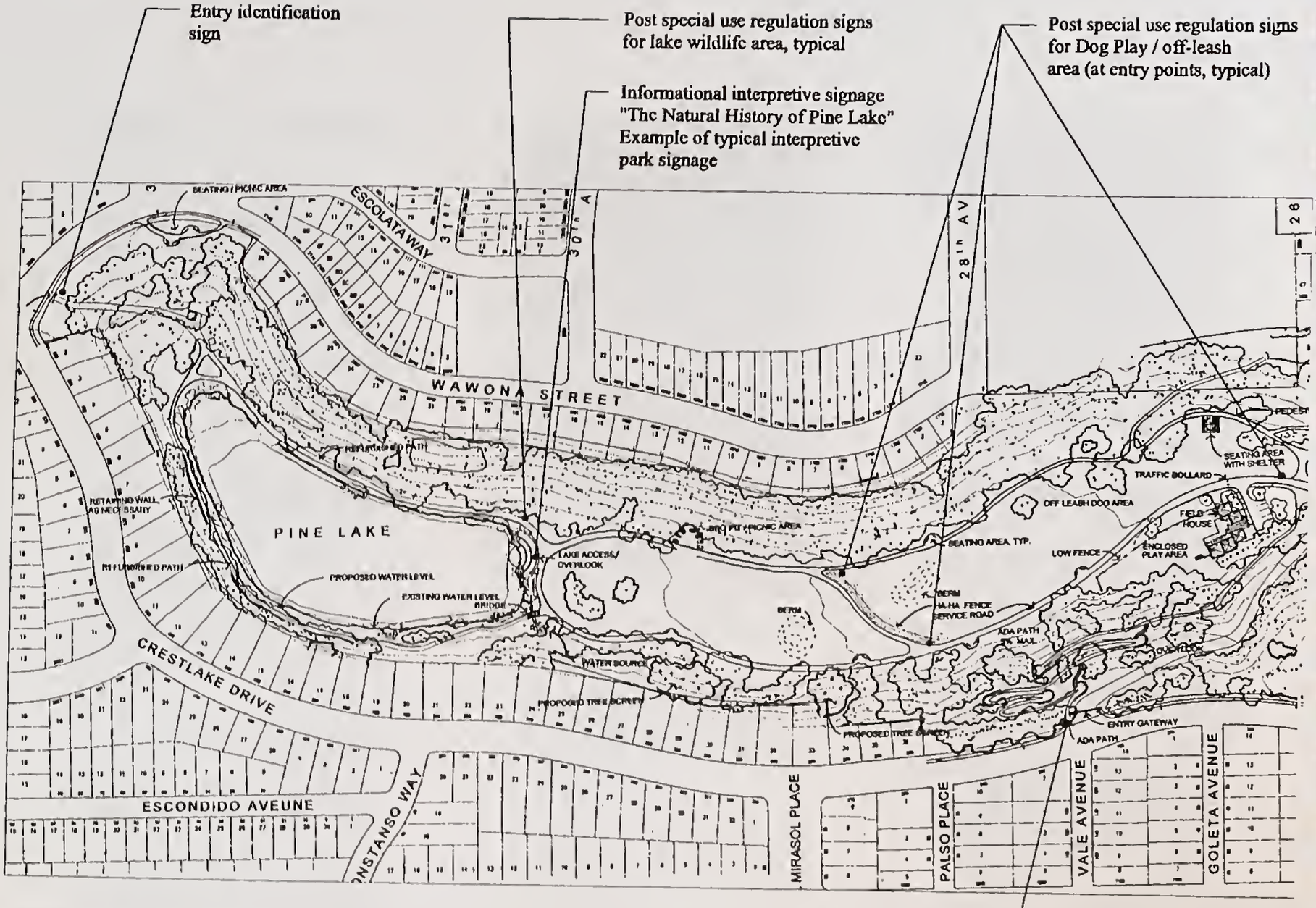
Use accessible letterforms and sizes, color combinations. Provide generous spacing between letters, words and lines.

Provide upper case, sans serif, raised letters and Braille interpretation on permanent signs located on accessible routes.

Conclusion

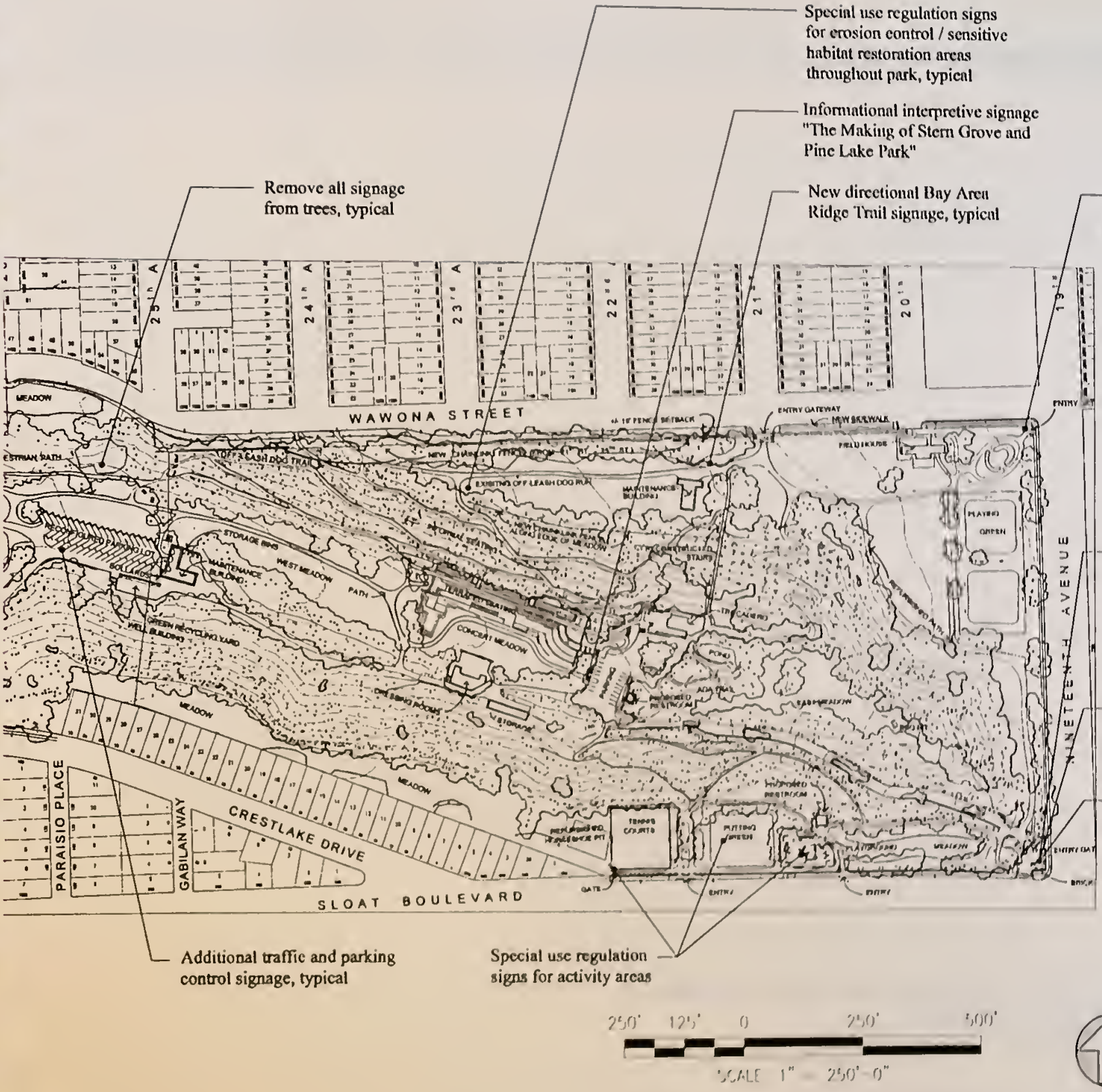
Communicating, informing and directing by use of signs, maps and markers is the collective work of many. Park planners, designers and supervisors; landscape architects, environmental graphic artists, map makers, and sign fabricators.

A park-wide signage policy and program systematically examines every detail from facilitating easy navigation through the park, park preservation and maintenance; park sign maintenance and replacement, ideally, provides the templates for Stern Grove and Pine Lake Park. Until policy and program materialize, the signage master plan for these parks makes recommendations that are generally applicable to all other parks. Similarly, priority recommendations for Stern Grove and Pine Lake Park are programmatically applicable to the park system.



General Recommendations

- Establish categories of park signage
- Comply with A.D.A
- Minimize proliferation of sign posts
- Consolidate information and standardize format
- Rectify signage deficiencies
- Preserve standardized sign types
- Form committee devoted to improving wayfinding and sign policy
- For more information, see Section 2.7 - Signage


Special use regulation signs for erosion control / sensitive habitat restoration areas throughout park, typical
Informational interpretive signage "The Making of Stern Grove and Pine Lake Park"
Remove all signage from trees, typical
New directional Bay Area Ridge Trail signage, typical
Entry identification sign
Improved park regulation signs typical at every arrival point and major gathering areas
Major entry identification sign
Wayfinding signage typical at every arrival point
Additional traffic and parking control signage, typical
Special use regulation signs for activity areas
WAWONA STREET
SLOAT BOULEVARD
CRESTLAKE DRIVE
PARAISIO PLACE
GABILAN WAY
NINETEENTH AVENUE
250' 125' 0 250' 500'
SCALE 1" = 250'-0"
N

STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

Signage Plan

2.7-A

CIRCULATION

Automotive Circulation, Parking and Roadways
Pedestrian Circulation
Accessibility

CIRCULATION

Overview

This section identifies strategies for improving the existing circulation systems. In some cases the circulation systems in Stern Grove and Pine Lake Park are efficient, safe and aesthetically pleasing, in other instances the circulation could be improved upon.

The goals relating to the circulation in Stern Grove and Pine Lake Park include the following:

A. Minimize the impact of motor vehicles on the park experience

B. Insure access to all, especially the mobility impaired, senior citizens, and families with children

C. Address the need for safe, efficient and well designed access for all travel needs in the park, including pedestrian, bicycles, and motor vehicles

Stern Grove and Pine Lake Park circulation as identified in the Site Assessment is separated into five categories: Automotive Circulation, Parking and Roadways, Pedestrian Circulation, Accessibility and Bicycle Circulation.

Fig. 3.1.1 - The stone stairs in Stern Grove.

This chapter includes the following:

3.1 Automotive Circulation, Parking & Roadways
3.2 Pedestrian Circulation
3.3 Accessibility

AUTOMOTIVE CIRCULATION, PARKING AND ROADWAYS

Overview

The existing traffic conditions, parking systems, and vehicular access patterns show no serious problems at Stern Grove and Pine Lake Parks during a typical weekday and weekend: During an event day vehicular volumes increase significantly and consequently, congestion problems arise along 19th Avenue and Sloat Boulevard. Additionally, significant increase in demand for on street parking in the surrounding neighborhood occurs on special event days. Emergency vehicles have direct, clear and planned access to Stern Grove during concerts, but still have difficulty maneuvering within the facility.

Key existing traffic deficiencies are summarized below:

A. Chronic traffic congestion problems exist along 19th Avenue during evening peak hour and weekend midday.

B. No exclusive pedestrian paths exist from Crestlake/Vale access point to the park's valley. Pedestrians are required to share the right-of-way with vehicles. While both pedestrian and traffic volumes on this access road are usually low, conflicts could arise during special events. Furthermore, the road is not considered an acceptable route per the ADA.

C. The east-west emergency road through the valley of the parks has a problematic pinch point behind the stage, which causes difficult maneuverability of emergency vehicles.

Automotive Circulation Recommendations

The automotive circulation system should be adjusted to respond to the findings of the assessment report in several ways.

A. At the entry plaza at 19th Avenue and Sloat Boulevard designed elements should directly respond to daily traffic congestion along 19th Avenue. The entry plaza should be a few feet lower than 19th Avenue. A short stone retaining wall and planting buffer should be implemented between the plaza and the street. Strategic moves are intended to screen the traffic from the view of those within the entry plaza.

B. At the Vale and Crestlake entrance, pedestrian and automobile traffic should be separated. A curvilinear accessible pedestrian path should weave through the wooded hillside down to the meadows. The new path should provide a beautiful entry into the park that completely separates the cars and pedestrians. (See Section 3.2 -Pedestrian Circulation)

C. The East-West Emergency Road through the valley of the parks should be realigned behind the theater. The realignment is intended to alleviate the existing problematic pinch point, which causes difficult maneuverability of emergency vehicles.

Parking and Roadways Overview

In general, the two access roads provide adequate ingress and egress to the park during an average day and event day. The pavement of the roadway and parking lots are in acceptable condition. Problematic pavement cracking and damage is primarily located at the access roadway/pedestrian path connecting the Pine Lake parking lot to Laguna Puerca.

Key existing defects and potential problems are summarized below:

A. Parking striping is not clearly visible to drivers. As a result, the parking lots are used inefficiently as vehicles park

haphazardly and intrude into adjacent spaces.

B. Severe cracking and deterioration of AC pavements at a limited number of areas can be potential tripping hazards.

C. Two of the three speed bumps along the Crestlake Drive/Vale Avenue access roads are ineffective due to physical damage. The speed bumps need to be repaired.

D. The Pine Lake Meadow is used primarily by dog owners and as overflow parking during events. This meadow has areas of exposed sand surfaces with minimal or no grass coverage and several depressed areas prone to standing water. The primary causes of the bare spots are the relatively thin layer of topsoil, heavy usage and vehicle parking. (See Section 2.2 - Erosion Control)

Parking and Roadways Recommendations

In order to alleviate the problems itemized in the Site Assessment the following actions are called for:

A. Parking lots should be redesigned in order to use the space most efficiently. The lots should then be painted with new bright stripes.

B. Severe cracking and deterioration of AC pavements should be repaired in order to remove the tripping hazards to walkers.

C. The two damaged speed bumps along the Crestlake/Vale entry road should be repaired in order to effectively slow traffic.

Pine Lake Meadow: 1) fill and grade areas prone to standing water, 2) apply topsoil where not present, 3) improve surface vegetation coverage, and explore alternative parking options by festival association. If meadow areas continue to exhibit soft soil conditions, use of sub-drains to reduce saturation may also be advisable, 4) the asphalt access road through the meadow should be widened to 14-foot minimum for fire truck access requirements, and the road should be repaved and its grade raised to be level with or crowned slightly above the adjacent meadow. A shallow linear swale is proposed along the edge of the raised access road to convey run off and trap sediment. (See Section 2.2 - Erosion Control) At the end of the access road near Pine Lake, a three-point or "Y" fire truck turn around must be provided. (See Section 2.3- Fire Protection)

Pine Lake Parking Lot

This asphalt parking lot is accessed by a steep access road from the Vale/Crestlake entrance. An internal service road leads west toward Pine Lake and the Pine Lake Field House, and east to the backstage area and on beyond to the Stern Grove Parking Lot and 19th & Sloat entrance. Because the Pine Lake Parking Lot is located in the center of the parks, the lot serves all areas.

During special events, primarily the Stern Grove Festival Concerts, visitors fill this lot and then extend into overflow parking in grassy areas located to the west of the parking lot. Disabled parking moves into the west meadow (to the east). When the lots are full, signs are posted at the access road.

Although there are minor maintenance problems with striping and cracked pavement, the major problems are caused by the fact that the parking lot interrupts the major pedestrian path through the park as well as the visual corridor. It is an unattractive barrier that needlessly splits the integrity of the 64-acre park.

Pedestrians passing through the park have their long meadow views broken by an unsightly stretch of asphalt and cars. As they walk through the lot their path turns into an obstacle course that is awkward and potentially dangerous.

Recommendations for Improvements

The PIP recommends a reconfiguration of the parking lot -- pulling it away from the north side of the valley. This will allow the major pedestrian path to continue on, unbroken and serene. This reconfiguration also allows for an uninterrupted visual corridor because the PIP also recommends moving the maintenance containers, the electrical transformer, and capped well house out of this corridor. A new maintenance building, with storage and service requirements for the park staff, will be built outside of the corridor and the electrical transformer will be incorporated into it or into an adjacent maintenance yard. (See Section 8.0 - Maintenance)

It should be noted that the view from the entrance drive will also be improved by this reconfiguration. Cars and pedestrians driving and walking down into the park will be met with a view of the park path running along the north side of the valley.

The re-striping of the lot will result in a more efficiently organized parking area, with the new configuration accommodating 50 cars (a gain of 7 spaces).

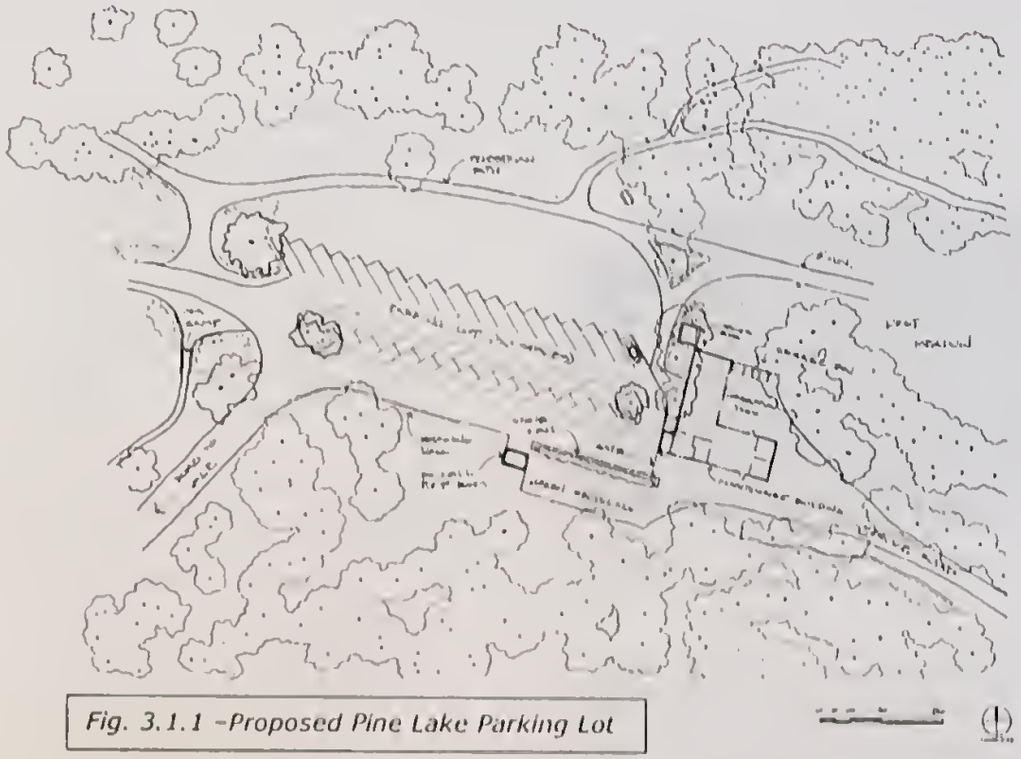


Fig. 3.1.1 -Proposed Pine Lake Parking Lot

Circulation will be facilitated by keeping maintenance/service vehicle parking outside of the parking lot and by adding directional arrows and signs.

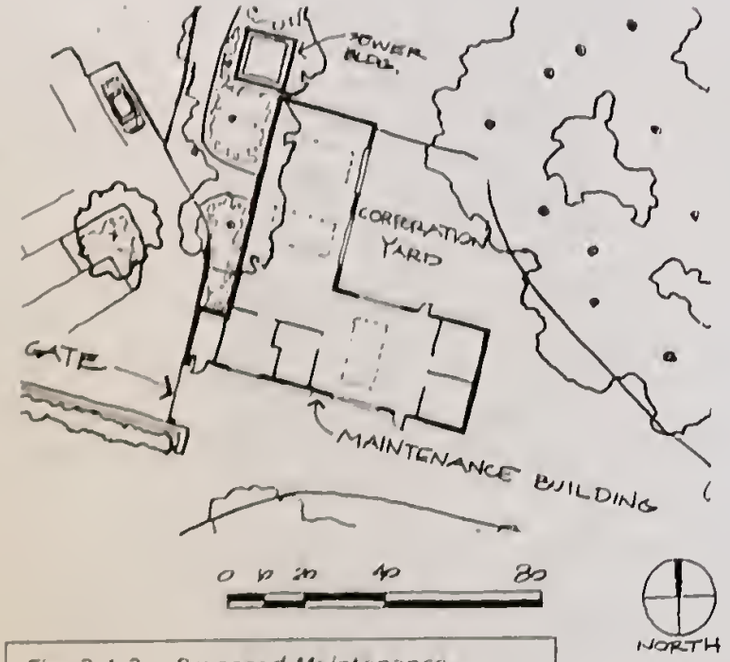


Fig. 3.1.2 - Proposed Maintenance Building.

PEDESTRIAN CIRCULATION
(See diagram 3.2-A)

Overview

Generally, pedestrian circulation in and around Stern Grove and Pine Lake Park is light on weekdays, and moderate on weekday evenings and weekends. Most of the daily pedestrian circulation takes place in the large meadow of Pine Lake Park. The formal pathways have heavier use than the informal pathways. Circulation for the summer concerts is heavy. The paths on the hillsides are not designed to accommodate the large crowds that congregate for special event days. Pedestrians often leave the designated path and walk freely on the hillside and as a result the hillside vegetation is trampled. The goal is to provide an accessible pedestrian circulation system that promotes safe and enjoyable pedestrian activities while protecting the landscape.

A. The existing East-West Pedestrian Path in the valley floor is in need of attention. This path extends from the Stern Grove Parking Lot through the Concert Meadow, along the northern edge of the West Meadow, through the Pine Lake Parking Lot and on to Pine Lake. This path is bisected by the Pine Lake Parking Lot. The park visitor who is going for a walk through the park is brought directly into the asphalt parking lot. This sequence disrupts the park experience. The visitor is jerked from the pastoral setting into the unattractive parking lot setting.

B. The path leading up the valley floor, connecting the Trocadero Clubhouse and Wawona Street, has a stone and mortar staircase without handrails. The stonework is rough and deteriorating in some areas along the staircase. This staircase is vital to the pedestrian circulation during the summer concert series. Currently it cannot accommodate the crowds. On concert days throngs of people leave the paths and march across the landscape, trampling vegetation with every step.

C. Dog walkers, pedestrians and joggers use the trail leading around Pine Lake on a daily basis. The compacted dirt trail around Laguna Puerca is 8 to 10 feet wide and relatively level along the north side of the lake. The trail is cut into the north side of the slope and is not retained. Along the south side of the lake the trail is less than 3 feet wide and is in poor condition due to erosion, roots and exposed utilities.

Fig. 3.2.1 - Trail at the southwest end of Pine Lake.

D. The toe of slope north of Pine Lake is significantly eroded where it meets the lake trail. Much of the lower slope is bare of vegetation cover with tree roots exposed along the pathway. A difference in elevation of approximately 2.5 feet exists between the trail and the toe of the adjoining slope. Soil, silt and sand are currently being washed down the slope across the trail and into the Lake. Trees near the toe of the slope are susceptible to root exposure, reduced stability and ultimately potential toppling. (See Section 2.2 - Erosion Control)

E. A number of issues contributing to trail erosion have been identified throughout the park, including user-created informal voluntary (dirt) trails with excessive erosion potential,

obstructed drainage swales adjacent to trail rock walls, asphalt (formal) paths with potholes and/or edge problems, lack of drainage features, rock stairways in disrepair and poor trail markings. The majority of existing trail issues are the result of a combination of excessive and/or unintended pedestrian use, insufficient surface durability and/or erodable surfaces, uncontrolled storm runoff and insufficient maintenance. (See Section 2.2 - Erosion Control)

Fig. 3.2.2 – A typical voluntary path causing erosion.

Pedestrian Circulation Recommendations

A. All park features should have adequate paths for safe and convenient pedestrian circulation. Publicize the walkway system through appropriate signs, and maps at entrances.

B. Selected walkways should be improved to provide access to park features and facilities as required by accessibility codes and regulations.

C. Pathway maintenance should occur more regularly, becoming a regular part of the gardener's responsibilities. Proper maintenance levels may require additional staff.

D. The East West Path in the valley of the park should be improved. The central parking lot has been redesigned. The redesigned parking lot offers 50 parking spaces in a reduced area. Currently there is a sea of wasted paved space. The asphalt in the northern unused portion of the parking lot should be removed. The pedestrian path will then have the room needed to meander through the sylvan landscape and bypass the parking lot. The experience of traversing the park on this path will be improved throughout. There will be seating areas adjacent to the path.

E. The stairway connecting the Trocadero Clubhouse and Wawona Street is not safe or accessible. This stairway should be reconstructed to be safe and ADA code compliant. A new staircase should be constructed to reflect the rustic character of the existing park stonework features. Natural stone is the most desirable material for the reconstruction of the stairs. Concrete treads with stone cheek walls could be a suitable design option. A new staircase could provide a fundraising opportunity. Tiles or stones with impressions or the donor's names could be placed on the stair risers.

F. Low stone retaining walls may need to be built in the toe of slope along the path north of Pine Lake. The implementation of a gravity wall needs to be carefully planned to maintain sufficient space for service vehicle access. It will be important to make these new walls aesthetically consistent with the existing stonewalls elsewhere in the park. (See Section 2.2 - Erosion Control)

G. The entire path around Pine Lake should be improved. The path on the south bank of Pine Lake should be improved by stabilizing erosive areas,

raising/realignment to mitigate exposed manholes and constructing low stone retaining walls, where needed, on the upslope side of the path. The path along the north bank should be improved to provide ADA compliant access to the west end of the lake. See Section 3.3 – Accessibility, for more information.

H. Several trail remedies relating to erosion control have been identified. For the highest use informal trails, generally located in the eastern half of the park on the northern and southern slopes, a combination of remedies are recommended. The existing rock swales located adjacent to the rock walls on the northern slope should be cleared of soil and plant debris and further evaluated for use as a storm runoff drainage feature. Optimizing the performance of the swales will require repairs such as re-setting or replacing dislodged or missing rocks and regular cleaning and maintenance.

The construction of new swales adjacent to and on the uphill edge of informal trails currently without swales is also recommended.

For high-use informal trails in areas with high runoff, a cellular confinement product is recommended to aid in the reduction of trail surface erosion.

In areas without sufficient lateral space to install a swale adjacent to the trail, the use of a flexible cellular confinement product graded to convey storm water in the trail is recommended.

Additionally, signage should be strategically installed to keep park users on the intended paths. Fences to prevent foot traffic from traversing slopes off-trail should be added. The implementation of additional walls should be considered to better identify trails. Erosion information displays would also help.

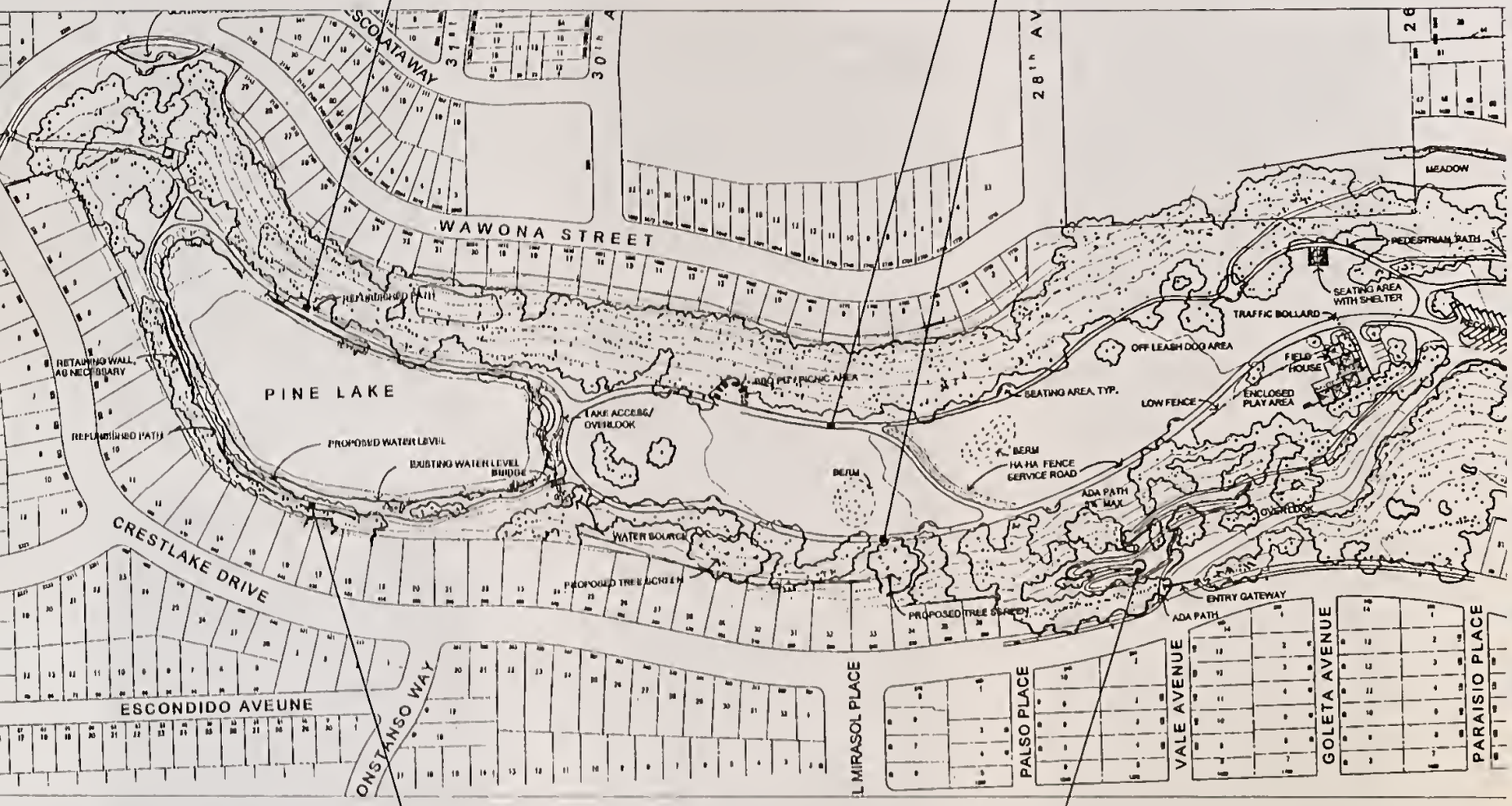
The Section 2.2 - Erosion Control of this report gives detailed direction as to how to successfully accomplish erosion control.

At the at Vale and Crestlake entrance pedestrian and automobile traffic should be separated. A curvilinear accessible pedestrian path should weave through the wooded hillside down to the meadows. The new path should provide a beautiful entry into the park that completely separates the cars and pedestrians. (See figure 3.3.1)

Provide accessible path at north side of Pine Lake - See Section 2.2 - Erosion Control and Section 3.3 - Accessibility

Improve east-west pedestrian path for continuity through park valley

Repave and raise access road through Pine Lake Meadow. See Section 3.1 - Automotiv



General Recommendations

For more detailed information Please see Section 2.2 - Erosion Control and Sections 3.2 and 3.3 - Circulation

Improve Pine Lake path - See Section 2.2 - Erosion Control and Section 5.3 - Pine Lake

Accessible path to Pine Lake Parking Lot and park valley

ive Circulation
Park Slopes - Also see Section 2.2 - Erosion Control
• Improve and repave formal paths
• Improve and restore informal trails
• Restore stone walls at paths where needed
• Revegetate / close some voluntary paths
• Install fencing at slopes to discourage voluntary paths
• Construct new path connections
Reconstruct stone staircase
Improve accessible route at street level
See enlarged plan Figure 3.3-A
WAWONA STREET
NINETEENTH AVENUE
CRESTLAKE DRIVE
GABILAN WAY
SLOAT BOULEVARD
Realign service road for better emergency access
250' 125' 0 250' 500'
SCALE 1" = 250'-0"
N

STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

Pedestrian Circulation

3.2-A

ACCESSIBILITY
(See diagram 3.3-A)

Overview

Steep descents into the flat valley floor where the pulse of the parks take place have not impeded efforts to begin complying with the 1992 federally mandated requirements of the American with Disabilities Act (ADA).

However, despite past efforts, no single existing park feature stands out as a thorough redesign for accessibility. ADA renovations are far from a simple matter - one improvement involves a nexus of improvements. Thus, the Park Improvement Plan recommends that some features and use areas be redesigned from scratch rather than modifying existing features in an afterthought fashion. Towards this end, some major re-grading and modified layouts are proposed.

The redesigned park buildings, features, and use areas will exemplify the successful integration of ADA requirements into the Park Improvement Plan renovations. These renovations will ensure that park areas, buildings and connections provide equal access for all.

Fig. 3.3.1 – Proposed accessible path from the Vale/Crestlake entry to the park valley.

Recommendations

The following are general recommendations for existing areas discussed in the July 2001 Site Assessment.

Stern Grove Perimeter and Entrances
(Also see Section 5.1 – Park Entrances)

A. Renovate or provide curb ramp:
   2 flanking driveways on Sloat Boulevard for slope, dimensions and color
   1 on 23rd Avenue
   East crosswalk on 23d Avenue, where driveway serves as curb ramp.
B. Enlarge entrance area.
C. Provide pedestrian and vehicular separation on steep and shared road to valley features.
D. Provide blue zones along Sloat Boulevard.

Active Use Areas and Buildings Along Sloat Boulevard

(See diagrams 4.2-A and 4.2-B)

Children's Playground

A. Re-grade for accessible path to playground.
B. Remove and replace drain grate with ¼-inch openings.

Fig. 3.3.2 – The Children's Playground.

Putting Green

A. Provide tread markings and handrails on existing stairs.
B. Remove intrusive vegetation around stairs.

Tennis Courts

A. Provide tread markings and handrails on existing stairs.
B. Re-grade and repave path from Sloat Boulevard.
C. Remove and replace drain grate with ¼-inch openings.
D. Replace drinking fountain.

Patio Between Putting Green and Tennis Courts

A. Provide path of travel to areas; remove tree roots in paving.
B. Reset patio paving.
C. Remove and replace drinking fountain.

Horseshoe Pits

A. Provide path of travel to one pit set.
B. Provide minimum clearances for disabled use.

Restroom

Restroom to be closed; New Sloat Avenue Restrooms to replace. (See Section 6.0 - Buildings and Structures)

Wawona Clubhouse Area

(See diagram 3.3-B)

Fig. 3.3.3 – The Wawona Clubhouse and Patio.

Right-of-Way

A. Renovate east curb ramp at 19th Avenue.
B. Provide accessible path from sidewalk to Clubhouse.
C. Provide access from blue zone on 20th Avenue to path of travel.
D. Reconfigure entrance on 20th Avenue to keep pedestrian travel on sidewalks.

Picnic Area

A. Add alternate accessible picnic table.
B. Expand patio for requisite clear and maneuvering spaces.

Croquet Courts (See diagram 4.2-A)

A. Provide accessible path of travel to croquet courts.
B. Remove existing gate; replace with accessible design.

Off-Leash Dog Meadow between 21st and 23rd Avenues

A. Provide blue zone.
B. Provide accessible path of travel.

Trocadero Clubhouse and Stern Grove Area

(Also see Section 6.0 – Buildings and Structures)

Fig. 3.3.4 – The Trocadero Clubhouse.

Trocadero Clubhouse

A. Provide accessible path from Stern Grove Parking Lot to Trocadero deck, entry and restrooms.
B. Separate path of travel from roadway.
C. Renovate staircase for accessible tread markings and handrails.
D. Renovate ramp for accessible slip-resistant surface, handrails and guide rails; widen ramp.
E. Relocate public phone to meet ADA.
F. Add handrails and tread markings to stone staircase.

Trocadero Fish Pond/Redwood Grove

Provide a segment of accessible path and handrail (*Site conditions in this area may pose an undue hardship for ADA compliance)

Trocadero East Meadow

A. Provide accessible path from parking lot to Meadow.
B. Provide accessible path from beginning of Meadow to barbeque area.
C. Remove tables and benches; provide accessible replacements.
D. Provide alternate fire grill beside existing stone barbeque.
E. Develop an accessible picnic and barbeque area at beginning of Meadow.

Parking Lot

A. Remove two drinking fountains; provide accessible replacements.
B. Provide accessible path to new Stern Grove Restrooms. (See Section 6.0 - Buildings and Structures)

Concert Meadow and Performance Area

A. Provide completely new and accessible stage, dressing rooms, restrooms and storage.
B. Provide second location in meadow for drinking fountain.

Fig. 3.3.5 – The Concert Meadow.

Pine Lake Park Perimeter and Entrances

Roadway Entrance at Crestlake Drive and Vale Avenue

A. Provide curb ramp at entrance and other intersections.
B. Provide accessible path down to head of Pine Lake Meadow and parking lot. (See figure 3.3.1)

Wawona Entrance between 33rd and 34th Avenues

A. Provide curb ramp.
B. Widen sidewalk for accessibility.
C. Provide path of travel to benches in lawn area.
D. Provide accessible parking stall and signage, and curb ramp.
E. Provide alternate picnic and bench furnishings.
F. Provide 32-inch minimum opening between bollards.

Pine Lake Parking Area, Meadow and Field House

Parking Lot

A. Provide 2 total accessible parking stalls and signage; relocate as close as possible to meadow entrance.
B. Separate pedestrian from vehicular travel.

Meadow

A. Provide alternate picnic and bench furnishings.
B. Provide path of travel.
C. Provide 32-inch minimum opening between bollards.
D. Divert run-off away from pedestrian path.

Field House

A. Provide path of travel from parking lot to field house.

B. Provide accessible picnic and barbeque furnishings; include drinking fountain and water faucet.

Meadow

A. Provide alternate picnic and bench furnishings.
B. Provide path of travel.
C. Provide 32-inch minimum opening between bollards.
D. Divert run-off away from pedestrian path.
E. Provide path of travel from parking lot to field house.
F. Provide accessible picnic and barbeque furnishings; include drinking fountain and water faucet.
G. Provide benches in alcoves, spaced at regular intervals.
H. Provide accessible surfacing and alcove off main path.

Laguna Puerca Area

Laguna Puerca

A. Provide path of travel to west end of lake. (This path should be stabilized granite fines if deemed an acceptable surface at the time of implementation).

B. Provide benches in alcoves, spaced at regular intervals.

Campfire Circle

Provide accessible surfacing and alcove off main path.

Fig. 3.3.6 - The Campfire Circle near Pine Lake.

Barbeque Area

Provide accessible grill and surfacing; tables, water faucet and drinking fountain.

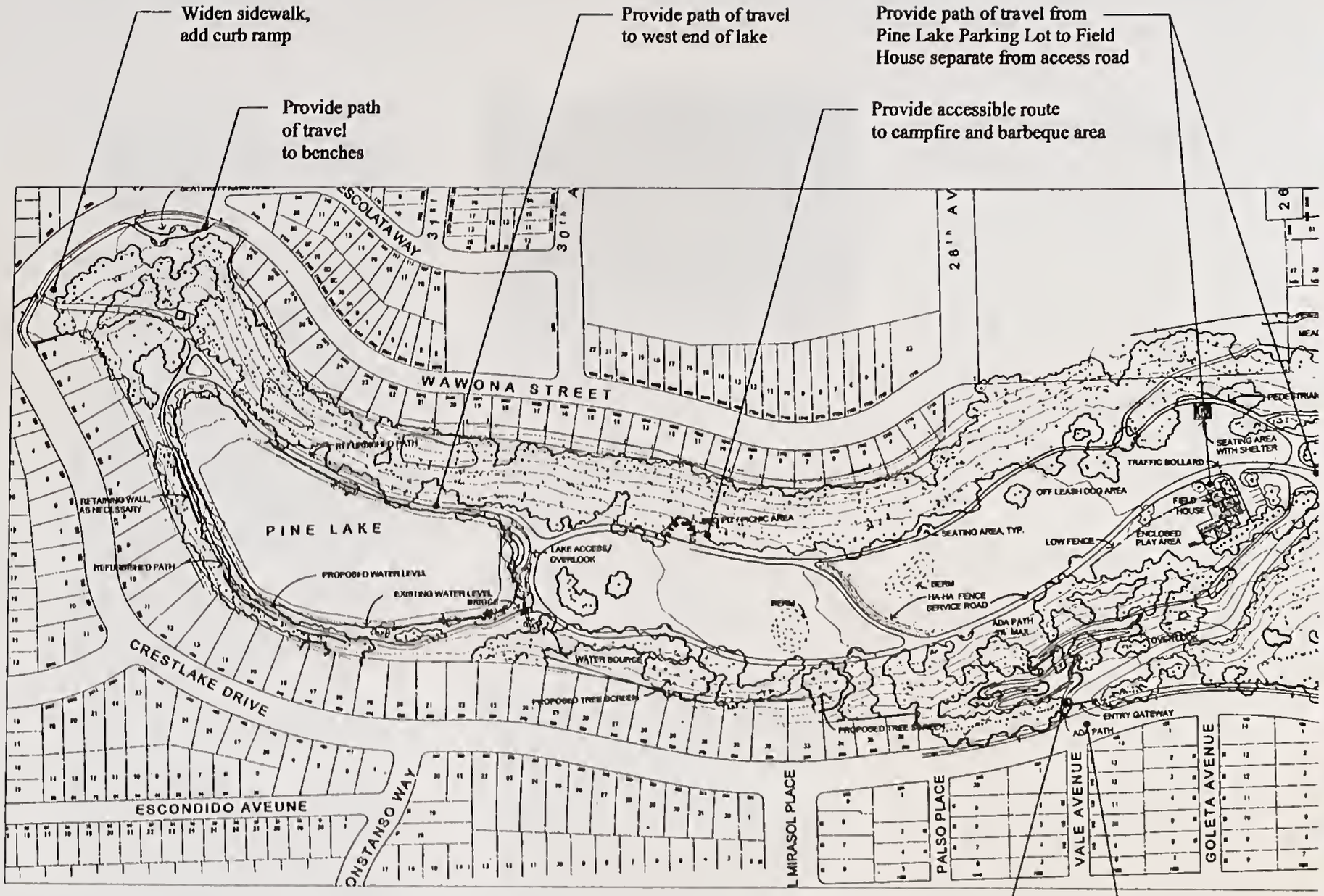
Sewer Pump Station

Provide path of travel.

Conclusion

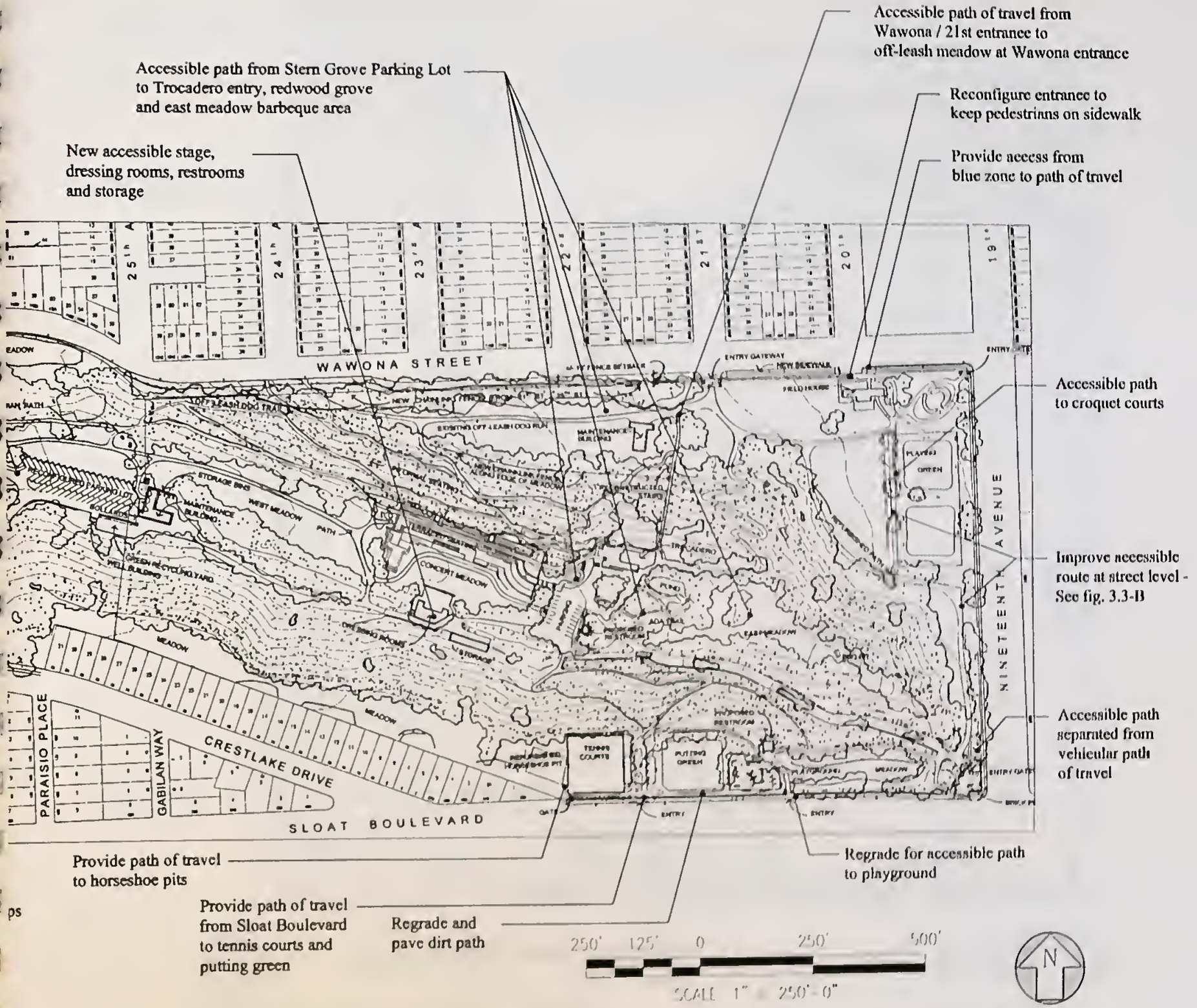
Providing equal access to park features, buildings, and amenities will assure opportunities for all to enjoy the variety of park experiences. Redesigns and replacement of amenities should take special care not to disrupt the rustic qualities and feeling of the parks. Thus, a successful integration of ADA modifications into the existing landscape will require a dedicated and sensitive effort by all involved.

Implementation of the Park Improvement Plan will ensure that Stern Grove and Pine Lake Park will be redesigned for access improvements that will benefit all park users.



General Recommendations

Please see Section 3.3 - Accessibility


Accessible path from Stern Grove Parking Lot to Trocadero entry, redwood grove and east meadow barbeque area
New accessible stage, dressing rooms, restrooms and storage
Accessible path of travel from Wawona / 21st entrance to off-leash meadow at Wawona entrance
Reconfigure entrance to keep pedestrians on sidewalk
Provide access from blue zone to path of travel
Accessible path to croquet courts
Improve accessible route at street level - See fig. 3.3-B
Accessible path separated from vehicular path of travel
Regrade for accessible path to playground
Provide path of travel to horseshoe pits
Provide path of travel from Sloat Boulevard to tennis courts and putting green
Regrade and pave dirt path
WAWONA STREET
NINETEENTH AVENUE
CRESTLAKE DRIVE
SLOAT BOULEVARD
PARAISIO PLACE
GABILAN WAY
25TH AVE
24TH AVE
23RD AVE
22ND AVE
21ST AVE
20TH AVE
19TH AVE
250' 125' 0 250' 500'
SCALE 1" = 250'-0"
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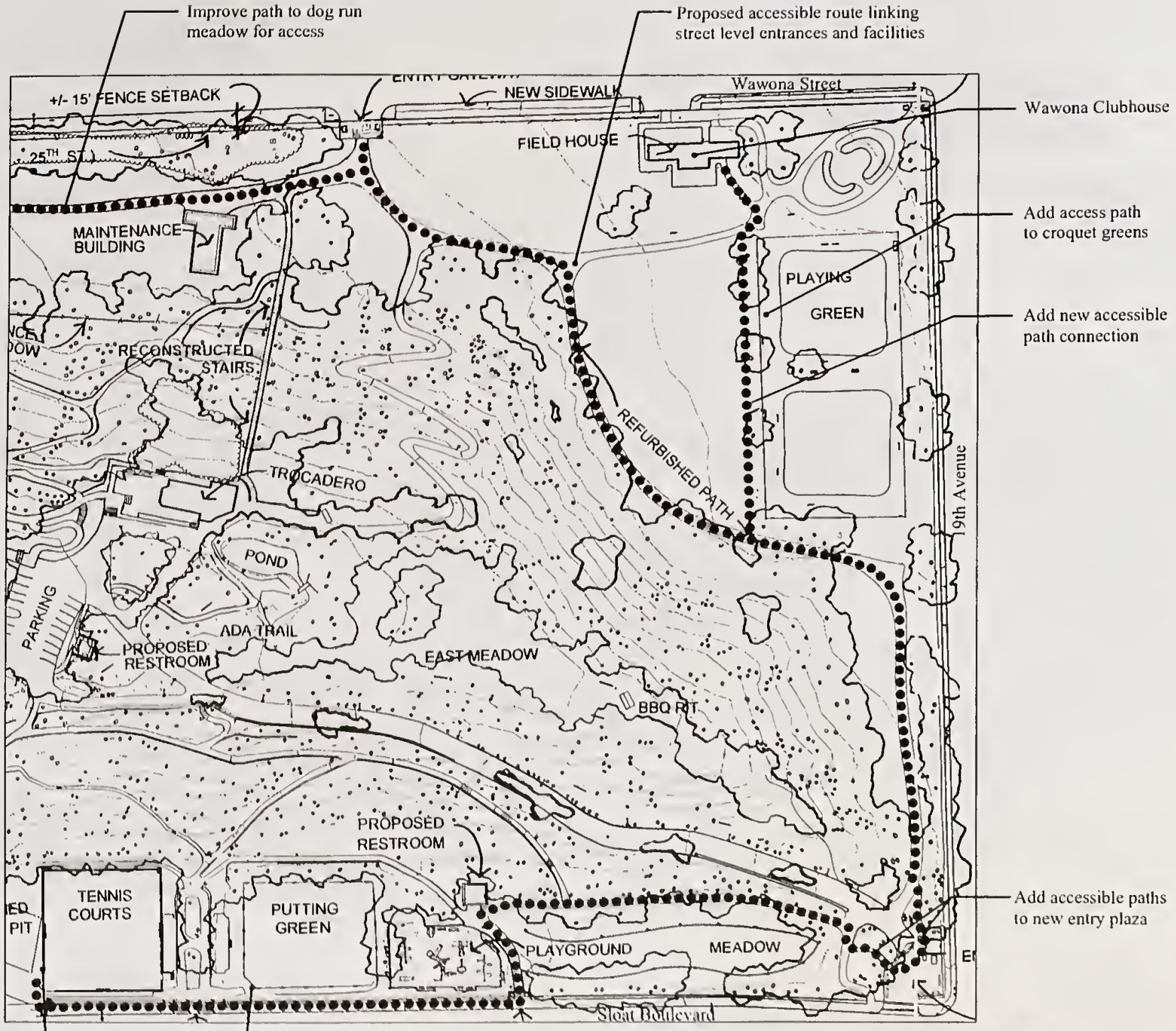
STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

Accessibility Recommendations

3.3-A



STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

Accessibility Stern Grove: Street Level Improvements

3.3-B

RECREATION AREAS

Leisure Recreation
Active Use Areas
Dog Play Areas

RECREATION AREAS

Overview

In this Improvement Plan the Recreation Areas includes Leisure, Active Use and Designated Pet Areas.

In some cases these recreation areas are efficient, safe and aesthetically pleasing. In other instances there is room for improvement.

The goals relating to the Recreation Areas in Stern Grove and Pine Lake Park include the following:

A. Insure that all Recreation Areas are safe, aesthetically pleasing and provide for the needs required by the recreational activity.

B. Insure access to all, especially the mobility impaired, senior citizens, and families with children.

This chapter includes the following:

4.1 Leisure Recreation
4.2 Active Use Areas
4.3 Designated Pet Areas

Fig. 4.0.1 – The Golf Putting Green

LEISURE AREAS

Overview

Stern Grove and Pine Lake Park are among the few open spaces in San Francisco that offer a wooded sanctuary away from the sights and sounds of the City. Stern Grove and Pine Lake Park combined offer 64-acres of parkland for strolling, hiking, picnicking and reflection. The leisure areas include a network of Trails and Paths, Meadows, and Picnic Areas.

Trails and Paths

The Parks have a network of paved and unpaved trails throughout its 64 acres. These paths are used daily for hiking, strolling, bicycling, dog walking and jogging. Along with the planned designated pathways, a web of volunteer paths has developed over time. Many of these volunteer paths have emerged during the summer concert series. Serious erosion problems have resulted where volunteer paths occur on steep, sandy slopes as the vegetation, vital to holding the slope in place, was destroyed. For detailed mapping of the condition of pathways please refer to Section 2.2 - Erosion Control.

There are two designated bicycle trails through the park: the San Francisco Bicycle Route 75 and the Bay Area Ridge Trail. The majority of cycling in the park occurs recreationally on weekends and weekday evenings. The pathway designated for Route 75 is in good condition. The pathways for the Bay Area Ridge Trail range from good to poor.

There are four bike racks for the entire park. They are in fair condition. The Stern grove racks do not provide adequate space to park a bike. The rack at Vale Avenue entrance is used most frequently on a daily basis. All racks are used on event days. For more detailed information, refer to Section 2.6 - Park Furnishings.

Fig. 4.1.1 - A typical paved pedestrian path with adjacent rock wall.

Meadows

There are several major and minor meadows scattered throughout Stern Grove and Pine Lake Park. These meadows link the parks various activity areas and contribute to the idyllic feel of the park.

Fig. 4.1.2 - A small meadow on the north side of the park.

Three separate meadows are located in the valley of Stern Grove. East of the Trocadero is a small meadow hidden by the surrounding forest. The eastern meadow is a wonderful picnic spot with a large built-in barbecue. It is also used for informal activities. The lawn is very compacted but in fair condition.

Fig. 4.1.3 - Picnic tables in the east meadow.

The Rhoda Goldman Concert Meadow, west of the Trocadero Clubhouse, is a large open lawn area that hosts the annual summer concert series. This meadow has two continuous asphalt pathways, one bisecting the meadow from east to west, and the other along its north edge. Both provide easy flow for pedestrians through the area. This meadow receives the majority of its use during the summer concert series. The lawn is in fair condition and suffers from gophers and other burrowing animals.

Immediately west of the concert meadow is another large meadow, the West Meadow. It is separated from the Concert Meadow by a dense and tall hedgerow. This third meadow has informal barbecue areas and is used by overflow concert crowds. The lawn condition is similar to the concert meadow.

Pine Lake Park Meadow is a popular community dog walker's destination. This expansive meadow is bordered by forested slopes. An asphalt service road runs through the meadow leading to the Pine Lake Field House and Laguna Puerca at the western end of the park. Dog walkers and joggers flock to this portion of the park daily. This meadow is in fair to poor condition. When the eastern end of Laguna Puerca was filled, maintenance personnel believe the fill contained concrete rubble in some locations, as rubble regularly works its way to the surface or is unearthed.

There are five minor hidden meadows in the park. One, located to the east of the children's play area, is infrequently used and in good condition. Another meadow lies northwest of the horseshoe pits, directly behind residential properties along Crestlake Drive. This meadow does not appear to be regularly irrigated or used and is in poor condition. There are three meadows along Wawona Street. At Wawona Street and 34th Avenue, there is a small meadow with an asphalt pathway lined with two wooden benches and two wooden game tables. The area is regularly irrigated, receives moderate use, and is in fair condition. Another small meadow is located across the street from the 1400 block of Wawona Street. The meadow is regularly watered and is in good condition. The last meadow is at Wawona Street between 21st and 23rd Avenue. This is an official off-leash dog area and is in fair condition, but not well used.

Picnic Areas

Within the park there are essentially six separate picnic areas of varying sizes. Four of these areas are in Stern Grove. In Stern Grove there are two picnic areas within the redwood grove that are frequently used. One of these areas will be relocated due to the construction of new restroom site in the location of the existing picnic area. For additional information regarding the condition of the furnishings in the picnic areas, see Section 2.6 – Park Furnishings and Section 2.8 of the Site Assessment.

Leisure Recreation Areas Improvement Recommendations

Trails

Careful maintenance of the designated trails is imperative to extend the lives of the trails and to make them aesthetically pleasing on a daily basis. Existing voluntary paths need attention. Some of these paths should be removed and revegetated. Action should be taken to repair and to deter new voluntary paths from being created. In these areas fences and signage should be added and destroyed areas should be revegetated. Other voluntary paths should be converted to designated paths.

For more detailed information and strategies, see Section 2.2 – Erosion Control.

Repair the Bay Area Ridge Trail where needed.

Meadows
Careful maintenance of the meadows is imperative. To this end, an automatic irrigation system should be installed and the meadows should be regularly irrigated. Problematic areas should be repaired. (See Section 2.2 – Erosion Control)

Picnic Areas
One additional picnic area should be added along the east-west Path running along the north edge of the Pine Lake Meadow. This will mitigate the loss of the picnic area in redwood grove near the Stern Grove Parking lot where the new Stern Grove Restrooms are proposed. (See Section 6.0 – Building and Structures) Benches should be added along the east-west path as well. The stone barbeque south of the Trocadero Clubhouse needs to be relocated. The new picnic area in Pine Lake Park would be a good location for this. All picnic areas should be accessible.

Conclusion

Stern Grove and Pine Lake Park have the perfect make-up for a leisurely outing. The network of trails and pathways provide for interesting hiking or bicycling, while the expansive meadows lend themselves to sunbathing, reflection, informal games and picnicking. In addition, dedicated picnic areas provide pleasant outdoor settings.

Park trails and paths, meadows and picnic areas should receive proper attention to enhance the quality of experience for visitors, facilitate ease of maintenance and preserve the pastoral character of Stern Grove and Pine Lake Park for future generations.

ACTIVE USE AREAS
(See diagrams 4.2-A, 4.2-B)

Overview

There are several active use areas for structured recreation in the Stern Grove and Pine Lake Parks. The active use that Stern Grove is best known for is its annual free summer concert series. The parks are also highly regarded for their pastoral setting and parkland available for more passive activities such as quiet walks, and picnics. The recreation facilities typically require a higher level of maintenance and investment than the leisure areas. The demands for recreation need to be balanced with the sylvan and pastoral retreat setting of the parks. Emphasis should be placed on improving and maintaining existing recreational active use facilities rather than on creating new facilities.

The park's active use areas are specifically programmed for structured recreational activities. These areas are enjoyed year round. "Active Uses" are identified in the Site Assessment and separated into the following six categories:
Children's Play Area, The Golf Putting Green, The Tennis Courts, The Horseshoe Pits, The Croquet Greens, and The Pine Lake Day Camp. Except for the Croquet Greens and Day Camp, these activities are grouped in one area along Sloat Boulevard. The Croquet Greens are adjacent to the Wawona Clubhouse along 19th Avenue, and the Pine Lake Day Camp is situated at the Pine Lake Field House.

Children's Play Area

The Play area has a few issues that need to be addressed.

A. The entry arbor is in good condition but overgrown with vines.
B. The fence adjacent to the entry arbor is overgrown with shrubs and vines that screen the play area from public view.
C. The slope of the asphalt pathway leading from the entrance at Sloat Boulevard to the play area exceeds the maximum running slope allowed per the Americans with Disability Act (ADA) standards.
D. The play structure was installed in 1978. It has pressure treated wood members that suffer from splitting and splintering. The play elements do not comply to the safety standards set by the U.S. Consumer Product Safety Commission (CPSC) in a number of ways: Insufficient safety zones between play elements and edges of play area; no separation of age-appropriate equipment; height of equipment; and head entrapment issues. Access to the play area and play elements does not comply with ADA standards. The sand surface is not code compliant. The play area is well used.

Fig. 4.2.1 - The Children's Play Area.

Golf Putting Green

The Golf Putting Green is in very good condition. It is supported by a handsome stone retaining wall that ranges in height from 2 feet to 5 feet and is in very good condition. The grassy "rough" area surrounding the putting green has many ruts caused by gophers or other burrowing animals. The lawn is manually irrigated with quick coupler connections and hoses. The putting green is well used by the community and is a unique component of the park's active use program.

Tennis Courts

A perimeter fence surrounds the Tennis Courts. The fence fabric is rusted in many areas, but shows no apparent breaks. The court has recently been resurfaced and

is in good condition. There are no apparent drainage problems. The tennis courts are well used and are the location for tournaments sponsored by the San Francisco Satellite Tennis Tour. The benches within the court area are in good condition. The wood slats could use some sanding and a coat of new paint. Weeds are starting to take over the lovely brick-viewing terrace adjacent to the tennis court. There are no benches in this area.

Fig. 4.2.2 – The Tennis Courts.

Horseshoe Pits

The Horseshoe Pits are a charming area in need of maintenance. There is not a paved path to this facility. A four-foot high chain link fence in good condition surrounds the area with entrances at two ends. The enclosed area is built on compacted grade with a one-half inch layer of gravel mulch. Weeds are growing through the gravel mulch. The horseshoe area is lightly used by the community. Four wood benches in fair condition are placed around the edge of the area. These charming benches appear to be historic. The wood slats are in poor condition and the paint on the metal frame is chipped. The pits are covered by shabby, pink carpet remnants. Several homemade rusting abacuses are attached to the fence.

Fig. 4.2.3 – The Horseshoe Pits

Croquet Greens

The Croquet Greens are accessed from the entrance at Wawona Street and 19th Avenue. An asphalt path leads to the greens, but the courts themselves are not ADA accessible. The area is watered by an automated irrigation system. The croquet greens appear to be in good condition and are well used. The San Francisco Croquet Club has made these greens their home. On the third Wednesday of each month the Club offers free lessons to the public.

Fig. 4.2.4 – The Croquet Greens

Pine Lake Day Camp

The Pine Lake Day Camp, operated by the Recreation and Park Department, is located at the Pine Lake Park Field House on the east shore of Laguna Puerca. It serves a maximum of 120-day campers in each weekly summer session. The building, picnic area and campfire area are not ADA accessible. The overall condition of the area is fair, but the lawn area between the picnic area and Laguna Puerca is in poor condition. The building does not offer any space for indoor group activities and interrupts the view from the meadow to the lake.

Recommendations

(See diagrams 4.2-A, 4.2-B)

Children's Play Area

The play area needs to be refurbished in order to ameliorate the main issues raised in the Site Assessment.

A. The vines on the entry arbor need to be replaced with a less aggressive vine and/or

maintained consistently to allow the arbor to serve as a well-designed transition between the city and the park. The entry should be inviting, provide vistas into the park, and should provide a sample of what is inside the park. The landscape treatment at entries should include more distinctive landscaped elements such as flowering shrubs, accent trees, and seasonal color. The existing arbor should highlight the entry.

B. The overgrown shrubs and vines at the fence adjacent to the aforementioned arbor need to be trimmed to allow for visual connections to the play area.
C. The pathway leading from the Sloat Boulevard to the play area should be modified to meet with Americans with Disability Act standards.
D. The three wooden benches and picnic table adjacent to the play area should be replaced with the newly selected park standard furniture.
E. The play area will need to be rebuilt to meet the requirements of the Americans with Disabilities Act, Title 24, and the Consumer Product Safety Commission guidelines. The U.S. Consumer Product Safety Commission (CPSC) Handbook regulates the design of safe play areas in California for Public Playground Safety. The CPSC guidelines cover safety issues such as distances between equipment (safety zones), separation of age group equipment (preschool viruses school age children), height of fall and surfacing, head entrapment (size of openings), and the elimination protrusions. Compliance with the CPSC guidelines must be met.
F. The ADA and the California State Building Code (Title 24, Disabled Access Regulations) provide guidelines for accessibility. Path of travel to and within play areas, and integration of accessible and non-accessible elements are covered by the guidelines.

The Golf Putting Green
The Golf Putting Green will be improved by the installation of an automated irrigation system. This will relieve the gardeners from their manual irrigation responsibilities. The gardeners will be then free to repair damage done by the gofers to the putting green. The green should also be reconstructed to meet USGA standards.

The Tennis Court
The Tennis Court benches should be repaired and painted. The brick terrace should be maintained weed free and benches should be added to terrace for spectators. Additionally, overgrown vegetation in this area should be trimmed. An ADA accessible path of travel needs to be provided from the sidewalk to the courts.

The Horseshoe Pits
An accessible path is needed to this facility. The existing benches need to be refurbished. New abacuses should be installed. Weeds should be removed. Covers for the pits should be replaced.

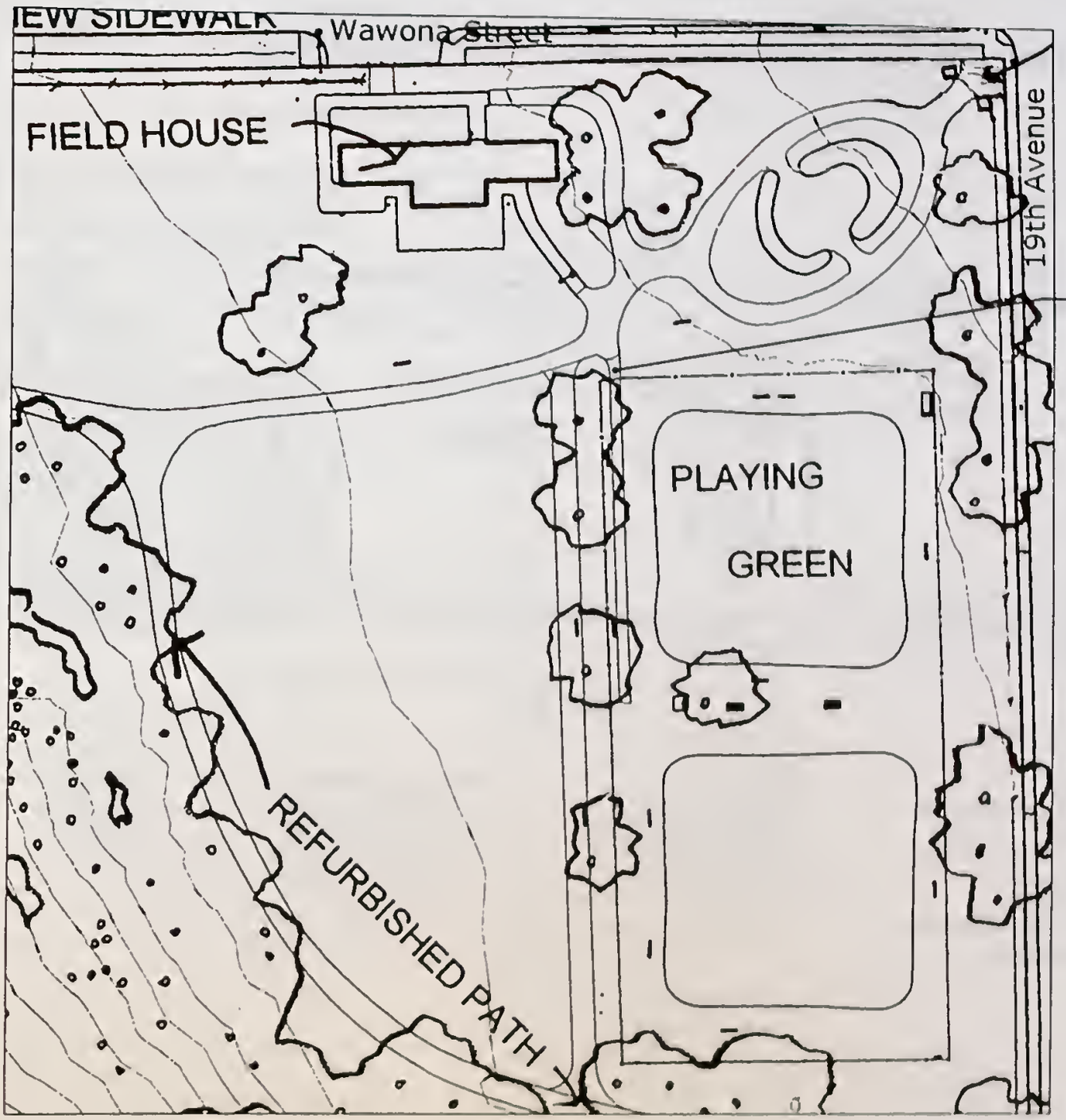
The Croquet Green
The Croquet Green needs an accessible path to be installed to at least one of the courts. The Croquet Green should also be reconstructed to meet USGA specifications for greens.

Pine Lake Day Camp
Pine Lake Day Camp's existing fire pit, picnic area and Field House should be replaced with a new Field House located in the south - east portion of the Pine Lake Meadow. The new building will provide interior and exterior space for group camp activities. See Section 6.0 - Buildings and Structures for a description of the proposed Field House.

Conclusions

Stern Grove and Pine Lake Park offer a unique collection of active use areas to fulfill the needs and interests of the community. The Children's Play Area, Golf Putting Green, Tennis Courts, Croquet Greens and Day Camp are well used but lack accessibility. The

Horseshoe Pits are lightly used, but could be more popular and deserve restoration. The Golf Putting Green, Tennis Courts, Horseshoe Pits, and Croquet Greens are in good condition. The Children's Play area and Pine Lake Day Camp are both in fair to poor condition and should be replaced entirely.

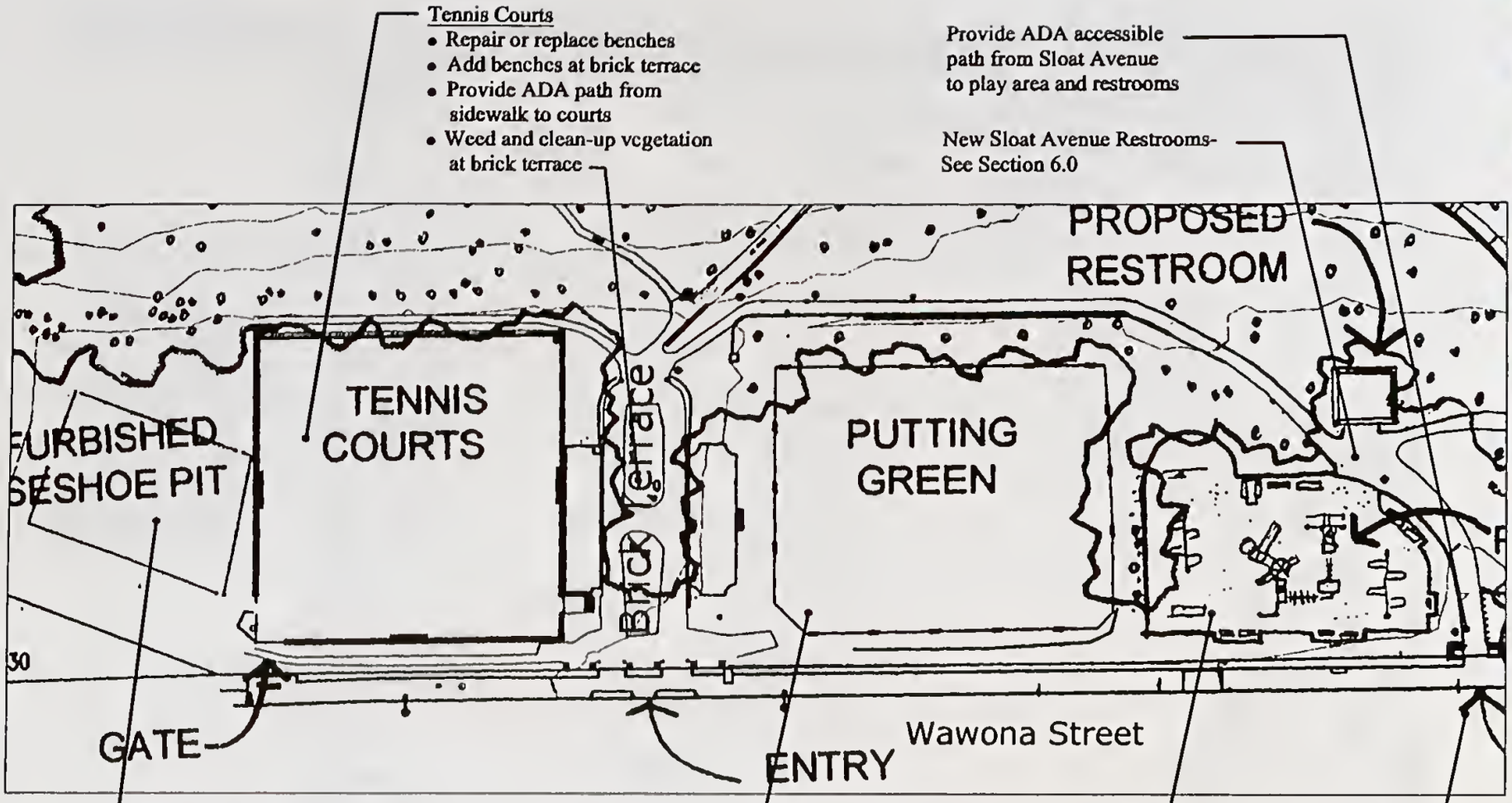


STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN

Active Use Areas:

Croquet Greens at Wawona Street and 19th Avenue

4.2-A


Tennis Courts
• Repair or replace benches
• Add benches at brick terrace
• Provide ADA path from sidewalk to courts
• Weed and clean-up vegetation at brick terrace
Provide ADA accessible path from Sloat Avenue to play area and restrooms
New Sloat Avenue Restrooms- See Section 6.0
PROPOSED RESTROOM
TENNIS COURTS
Brick Terrace
PUTTING GREEN
URBISHED SESHOE PIT
30
GATE
ENTRY
Wawona Street
Horseshoe Pits
• Provide ADA accessible path to one pit set
• Replace or refurbish benches
• Replace abacuses
• Replace pit covers
• Weed pit area and repair/replace decomposed granite
Putting Green
• Provide automatic irrigation at putting green
• Reconstruct green to USGA standards
Replace and Renovate Children's Playground
• Replace play structure with new play elements
• Replace picnic table and benches
Improve entry trellis, fencing and planting

60' 30' 0 60' 120'

SCALE: 1" = 60'-0"

N

STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

Active Use Areas:
Sloat Boulevard

4.2-B

DOG PLAY AREAS

(see Diagram 3.2-A for reference)

Overview

Currently there is one Dog Play Area (DPA). It is located in the meadow on the northeast portion of Stern Grove in close proximity to the intersections of Wawona Avenue and 21st, and 23rd Avenue. This meadow is in fair condition but it is not well used. The dog walkers prefer to walk their dogs in the Pine Lake Park Meadow.

Pine Lake Park is an extremely popular dog walker's destination for those in the community. The park offers an expansive meadow bordered by forested slopes. An asphalt pathway runs through the meadow leading to the Pine Lake Field House and Laguna Puerca at the western end of the park. Dog walkers flock to this portion of the park daily. Although not officially an off-leash area, the meadow is full each morning with dogs chasing balls, Frisbees and each other. The leash law is not enforced, but most owners pick up after their pets.

Dog Play Areas Improvement Recommendations

A. A portion of the aforementioned Pine Lake Meadow should be converted into a Dog Play Area.
B. In order to deter the dogs from running to the lake, a fence running north south should be installed. This 4' tall fence should be installed in a slight depression (Ha-Ha) so that the fence does not impede the view between the meadow and the lake.
C. A trellised sitting area for the dog owners should be installed. This area should have a bulletin board, a drinking fountain, a trellis, some benches, picnic table, water faucet, and drinking fountain. Additionally, this area should have bag dispensers, signage, and trash cans. Maintenance here, as in all areas of the park, will be very important. The parking lot will need to be hosed down regularly in the dry seasons and the lawn will need to be regularly irrigated. (A planned automatic irrigation system will free the maintenance staff to tend to the long list of other items needing care.)
D. An official off-leash dog trail should be designated to connect the existing DPA near Wawona Street to the new DPA in Pine Lake Meadow.

SPECIAL AREAS

Park Entrances
Performance Meadow
Pine Lake

SPECIAL AREAS

Overview

Three areas within Stern Grove and Pine Lake Park have special significance for park use, experience, character and function. These areas are:

A. Park Entrances: Park Entrances provide important transitions into the park and give identity to both pedestrian and vehicular access points. Entrances should be enhanced and improved using a consistency of design elements applied appropriately to the use and prominence of each entry.

B. The Concert Meadow: The Performance Meadow is a special place in Stern Grove and provides a dramatic, natural setting for concerts and events. The Concert Meadow should be improved to better accommodate audiences, and the concert buildings and facilities should be replaced to provide modern amenities for performers.

C. Pine Lake: Pine Lake is a unique natural resource and should be rehabilitated to ensure it's health, wildlife value, and beauty for future generations.

Fig. 5.0.1 - Pine Lake in the early 20th century.

Recommendations for these areas are provided in this section with particular attention to enhancing function, character and use:

5.1 Park Entrances
5.2 Performance Meadow
5.3 Pine Lake

PARK ENTRANCES

Overview

There are two major vehicular entries:

A. One off Sloat Boulevard at 19th Avenue that leads to the Stern Grove Parking Lot in front of the Trocadero

There are numerous pedestrian entries:

A. 19th Avenue and Sloat Boulevard
B. Crestlake Drive & Vale Avenue
C. The west end of Pine Lake along Wawona Street
D. 21st & Wawona Street
E. 19th Avenue & Wawona Street

Fig. 5.1.1 – Sketch of existing condition.

B. One at the intersection of Crestlake Drive & Vale Avenue that leads to the Pine Lake Parking Lot between the east and west meadows.

F. Active use entries (i.e. playground, tennis court, etc.) along Sloat, between 20th & 22nd.
G. Miscellaneous informal trails and shortcuts

Recommendations for Improvements

All of the entrances to Stern Grove and Pine Lake parks are in need of repairs and improvements to varying degrees. There is not an ADA accessible path down into the park. The park needs a comprehensive approach to its entries, circulation, and signage.

Vehicular Entries

The ***19th Avenue and Sloat Boulevard*** entry is considered to be the main entry to the park. It is most visible to the general public. The entry is confusing because of its awkward vehicular access; its cross-sloping entry pad; and the numerous traffic lights, signs, and utilities, which clutter the area. This entry lacks any distinctive character or identity, aside from the mature stand of eucalyptus trees. The entry needs to be redesigned to improve access and safety as well as establish an appropriate character for the park.

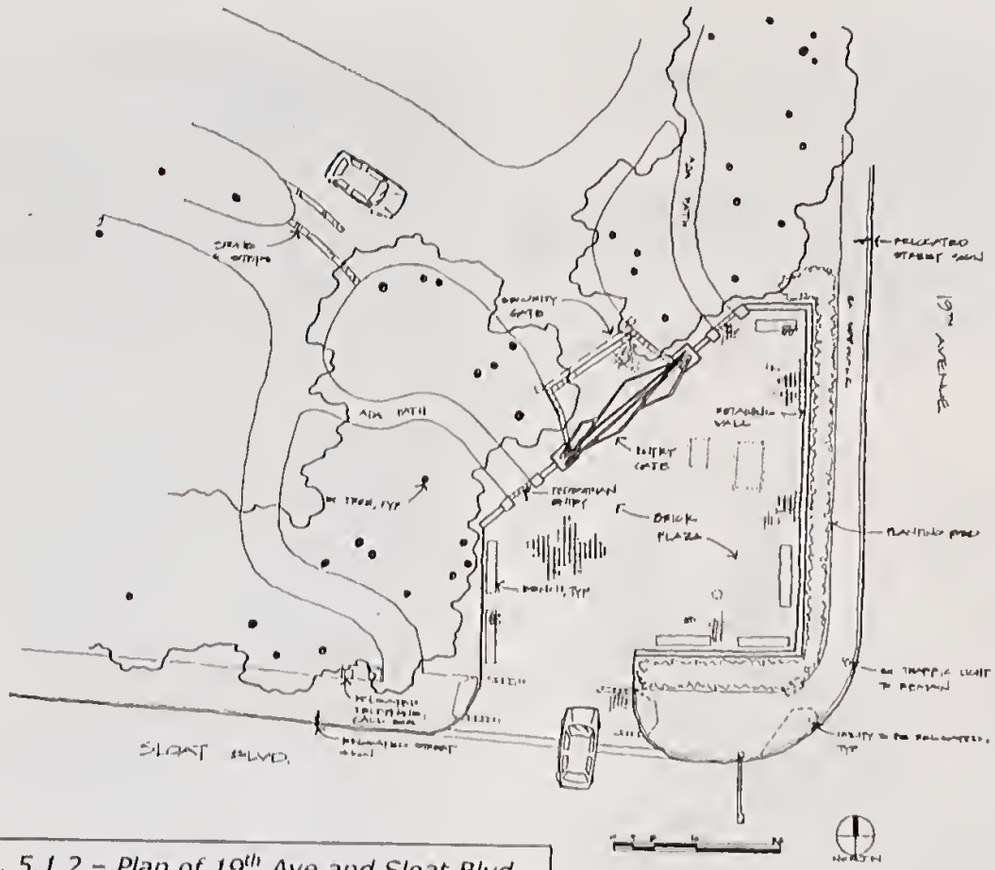


Fig. 5.1.2 – Plan of 19th Ave and Sloat Blvd.

Many of the existing utilities will be removed or relocated. The existing public telephones, police call box, and Sloat Boulevard street sign will be relocated west of the vehicular entry, the items will be relocated approximately 75-90' west of their current locations. The flagpole should be removed, and possibly incorporated into the redesigned entry. The existing Rec. Park standard Park Feature Sign should be removed from its current location and possibly incorporated into the redesigned entry. The street sign at 19th Avenue should be relocated approximately 65' to the north of its current location. The existing streetlights and fire hydrant are to remain.

The existing asphalt paving and corner plantings should be removed to create an entry plaza. The plaza will be graded to provide as level an area as possible. A planting area will run along 19th Avenue at the plaza and along a portion of Sloat Boulevard (See Figure 5.1.2), which will be defined by a low retaining/seating wall on the plaza side. The plaza paving will be brick.

The vehicular circulation pattern into the park will remain the same (entry off of Sloat Boulevard), though there will be more separation between the vehicular and pedestrian traffic. There will be a demarcation of the vehicular entry at the northwest corner of the new plaza. This may incorporate either a general park sign, specific entry sign, a historical marker/plaque, or a combination of these. This new entry will give a unique and visible identity to the park as well as a main entry experience.

On both sides of the main entry there will be pedestrian entries. These pedestrian entries are meant to separate the pedestrians from the main vehicular traffic and to provide an ADA accessible route through the plaza connecting the upper/street level activities. (See Section 3.0 - Circulation/Accessibility) The plaza also provides a location for buses to pick up disabled passengers during concert performances.

Fig. 5.1.3 – Sketch of proposed entry at 19th Ave. and Sloat Blvd.

The approximate length of the new ramp will be 1,350 LF and will maintain a slope not to exceed 5% so as to avoid the need for rails along the ramp. There should be resting/seating nodes located at several points along the ramp. These nodes will be sited to take advantage of the various vistas. Any necessary retaining walls will be concrete construction with a natural stone facing that will be similar in color and texture to existing retaining walls found throughout the park (See Figures 5.1.4 and 5.1.5).

The ***Crestlake Drive & Vale Avenue*** entry also lacks the character of a major park entry. It mixes vehicles and pedestrians' access on a narrow, steep, and winding access road.

Proposed improvements include:

A. An entry gate/sign similar in character to the entry feature at 19th and Sloat

B. A meandering ADA accessible pedestrian ramp entry (See Section 3.3 - Accessibility) from the street to the valley floor.

Fig. 3.3.1 – Proposed accessible path from the Vale/Crestlake entry to the park valley.

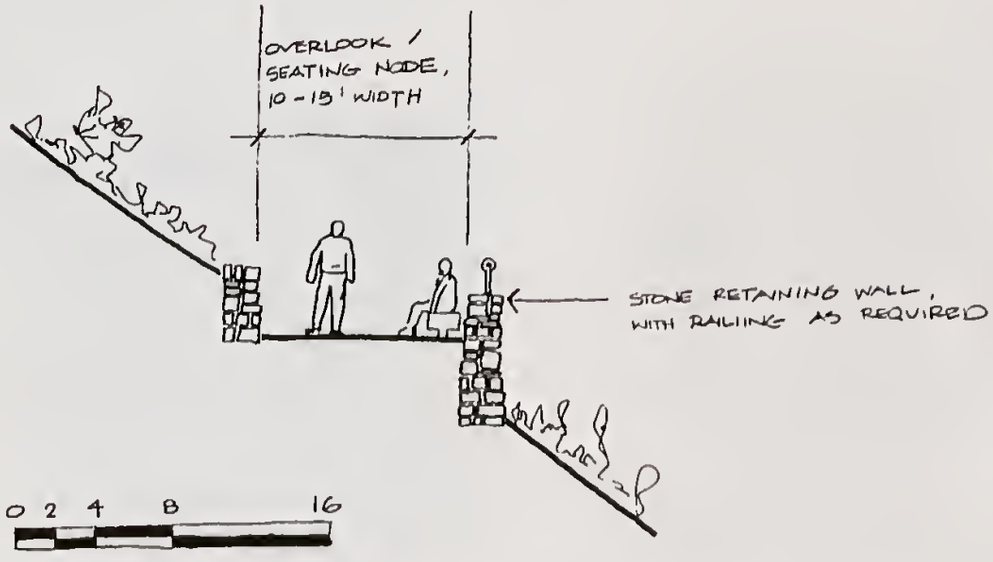


Fig. 5.1.5 – Sketch of section at overlook path.

The ***Wawona entry at the west end of park*** overlooks Pine Lake. There is a vehicular entry that is used only for maintenance and service access. The pole gate remains closed and locked and neighborhood residents use the road as a pedestrian entrance.

Only minor enhancements to the plantings and the adjacent picnic area are planned at this entry.

The entry at ***Wawona Street and 21st currently*** serves cyclists and pedestrians. It is also an ADA accessible entrance to the park's perimeter uses. This entry will have a small plaza and entry pilasters similar in character and material to the gateway columns at the two major vehicular entries. These amenities will allow for control mechanisms to be put in place during concerts and performances.

The pedestrian entry at ***Wawona Street and 19th*** is very visible though not heavily used. There is a chain link fence and planting beds, both of which are in disrepair. A new fence and entry feature will be installed at the corner. It will be a small/pedestrian scaled entry similar in material and design to 19th and Sloat Boulevard (See Figures 5.1.6 and 5.1.2). The plantings and paving will be improved.

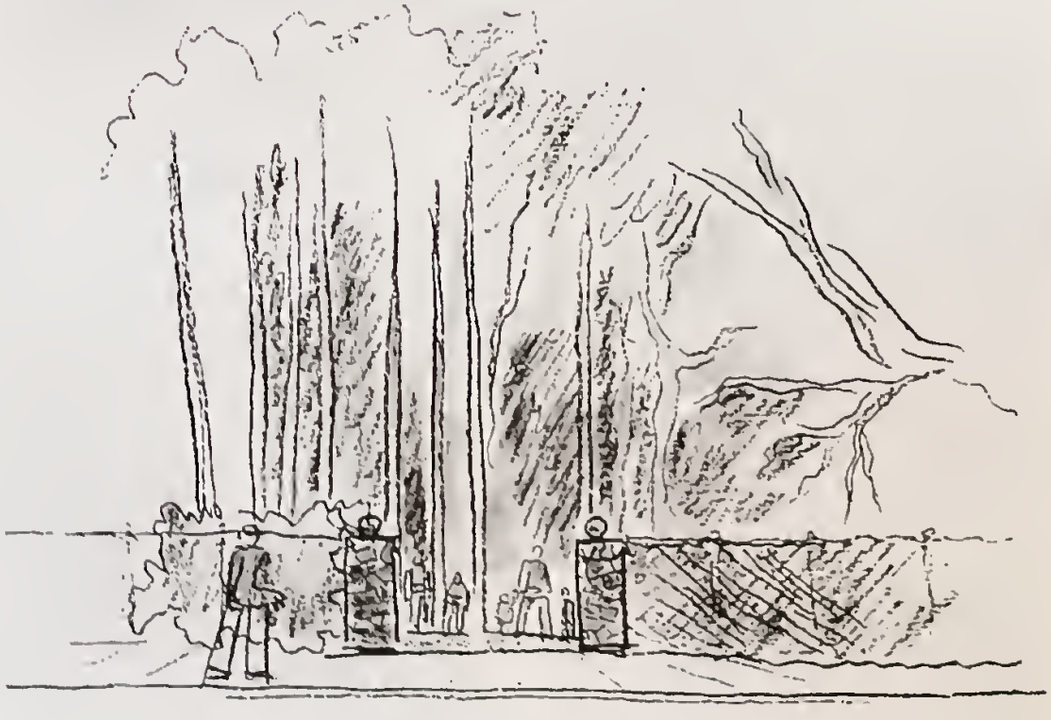


Fig. 5.1.6 – Sketch of proposed entry at Wawona St. and 21st Ave.

There are ***several active use pedestrian entries*** on Sloat between 20th & 22nd (See Section 4.2 – Active Use Areas). These entries serve specific areas such as the existing children's playground, the putting green, and tennis courts. The paving and plantings at these entries will be repaired as needed but there are no substantial improvements planned here.

The ***miscellaneous informal entries*** around the park perimeter will not be encouraged.

PERFORMANCE MEADOW

Overview

The concert meadow is a rectangular area (approx. 320' x 120') located immediately west of the Stern Grove Parking Lot and squeezed between the steep forested slopes of Stern Grove. A performance stage is located at the south side of the meadow. The principal east/west pedestrian path for the park bisects the meadow and a secondary pedestrian path leads along the north side of the meadow below a stone retaining wall. The stage and its associated buildings are in disrepair and need to be replaced (See Section 6.0 – Buildings and Structures), the retaining wall needs repair, and the north side slope requires intervention for erosion control. The perimeter of the meadow is undefined and poorly controls crowds.

Fig. 5.1.7 - Sketch of existing slope condition.

There are three specific areas that receive heavy use by large audiences during the summertime concerts. Each of these areas shows signs of age and wear. These areas are:

1) The flat meadow (between the stage and the principal path)
2) Two informal lawn terraces (between the path and the retaining wall on the north)
3) The forested slope to the north and above the retaining wall.

not been maintained or updated to accommodate these large crowds.

The stage and associated buildings are in disrepair, the terraced lawns are uneven and the retaining walls are crumbling in places. The service roads need realignment to facilitate the movement of emergency vehicles.

The three areas that receive heavy use (see above) suffer from wear and erosion. The perimeter and pathways need attention to improve circulation and crowd control.

Fig. 5.1.8 - Sketch of existing concert meadow.

Recommendations for Improvements

The concert meadow is the park space that is programmed for large performances and gatherings (such as graduations) yet it has

The existing east-west path, which bisects the meadow, should be relocated 10-20 feet to the south and the material and condition improved with asphalt or a similar surface. The surface should be ADA compliant.

Fig. 5.1.9 - Sketch of proposed Concert Meadow improvements.

The area to the south of the path should remain as a level lawn area. There should be enough space provided for bench seating directly in front of the stage (approx. 10-12 rows) with space for informal lawn seating to the east and west of the bench seating. There also should be an opportunity for disabled seating around the bench seating (preferably adjacent to the path).

The area to the north of the central path will be formally sculpted into a series of terraces. The current terraces are too steep and uneven for use during concerts. The program for these terraces calls for two rows of tables during concerts. The current condition is uneven, making it uncomfortable and potentially unsafe. To better utilize the space along the existing slope, a series of seating height retaining walls will be constructed. These will better retain the steep slope and simultaneously create a more comfortable and varied seating area.

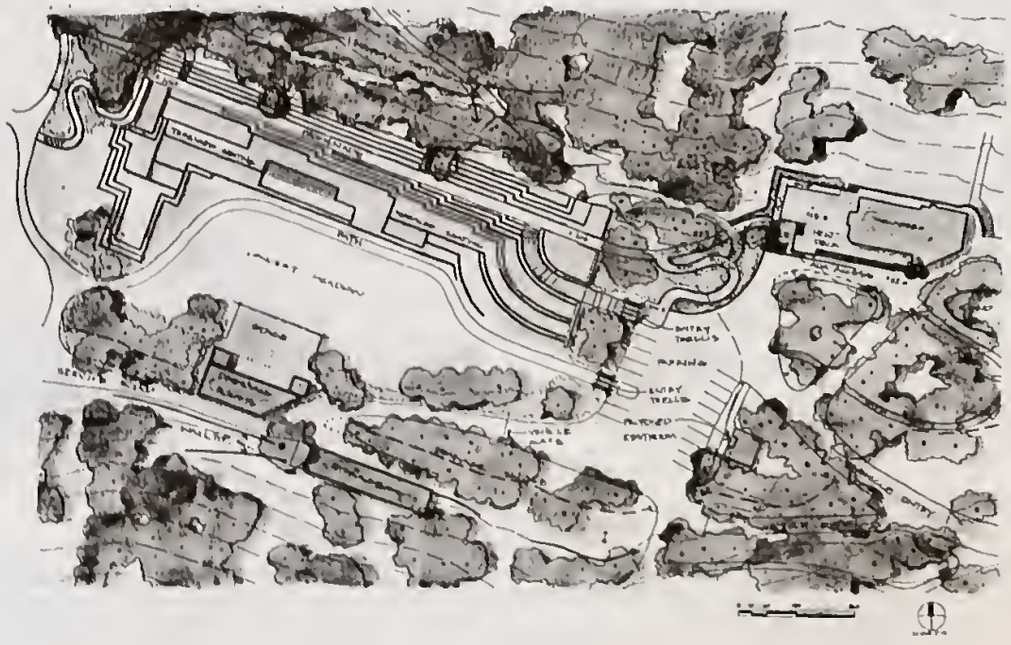


Fig. 5.1.10 – Plan of proposed improvements at Concert Meadow.

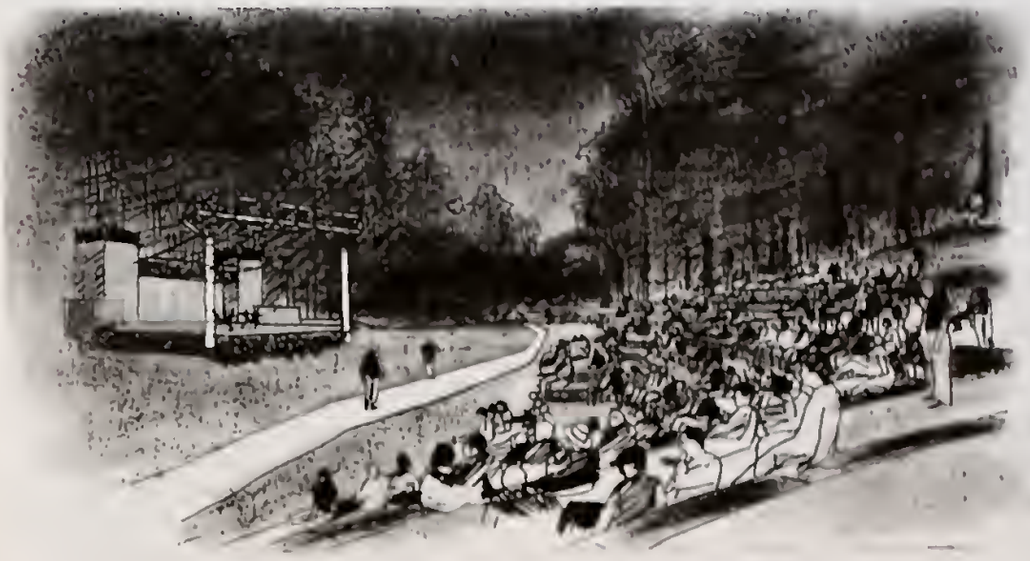


Fig. 5.1.11 – Sketch of proposed Concert Meadow terraces.

This realignment of the terraces and secondary path will allow better use of the space and a greater variety of seating opportunities.

Some informal seating will still occur above the existing retaining wall. These seats will consist of natural log retaining walls in various appropriate areas. These log retaining walls should be installed in conjunction with improvements to existing paths, selective removal of unnecessary paths, and the introduction of appropriate under story plantings.

The walls for these reformed terraces will be less than 30" in height. Poured concrete construction with a stone facade/finish would provide walls similar to the existing retaining walls found throughout the park. The area behind each retaining wall will become a level lawn area of varying widths. These level lawn areas can provide space for both the SGFA and Rec. Park tables, as well as informal lawn seating. Towards the north edge of the meadow the upper or secondary path can be relocated approximately 15' to the south. This will allow it to become utilized as the main east-west access once performances have begun. Yet another opportunity for several rows of seating exists above this pathway and the retaining wall.

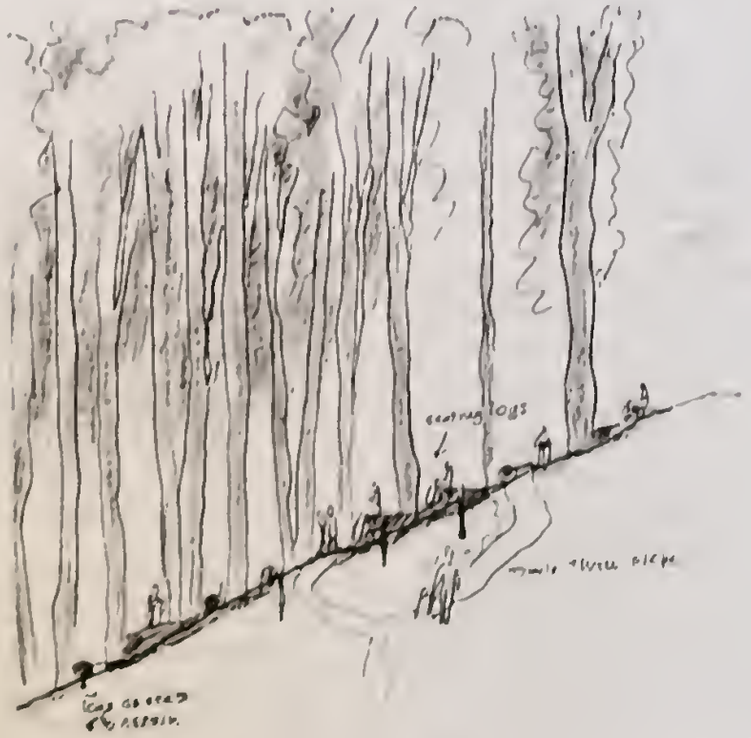


Fig. 5.1.12 – Sketch of informal seating.

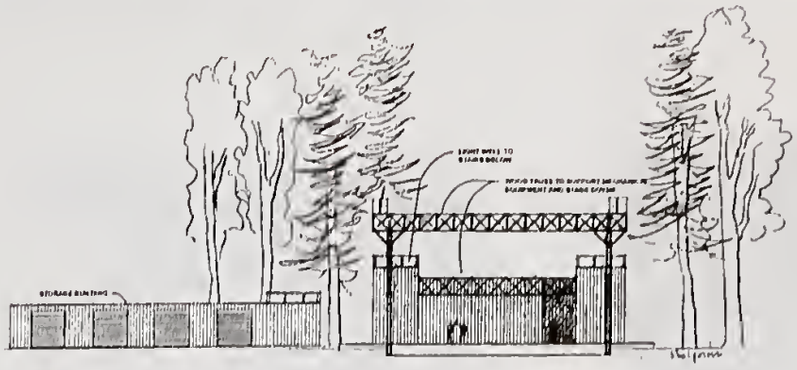


Fig. 5.1.13 – Sketch of proposed stage and backstage building

The intention here is to reduce erosive impact to the slope and encourage concertgoers to utilize specific areas on the upper hillside. A fence along Wawona (subtly set back into the under story of trees) and a fence along the crest of slope in the Wawona off-leash dog meadow, will help direct and control pedestrian access during concerns. Gateways through the Wawona fence will be established at all street intersections and would be closed only for special events.

The existing stage and backstage building are in poor condition and will be replaced. The current facilities do not facilitate easy access or appropriate accommodation for the performers at Stern Grove. The proposed stage configuration will slightly decrease the current footprint, improving the emergency access behind the stage (through the Pine Lake/Stern Grove service road), and improving access for performance related moving vehicles.

The Office of Lawrence Halprin and their acoustic consultant analyzed the existing location of the stage. It was determined that the current location best utilized the natural acoustics of the site. It was noted that virtually all performances use electronic audio amplification systems. Overall, it was agreed that there would be no benefit in relocating the stage.

An evaluation of the current stage program led to the recommendation for a two-story structure. Such a design will enhance the natural acoustics of the site as well as act as a backdrop for the stage itself. The dressing rooms, green room, and performance related storage currently located adjacent to the stage building can be incorporated into the stage structure. Items in the programs which fit comfortably into this location are as follows: two large dressing rooms (chorus rooms), two smaller dressing rooms (star

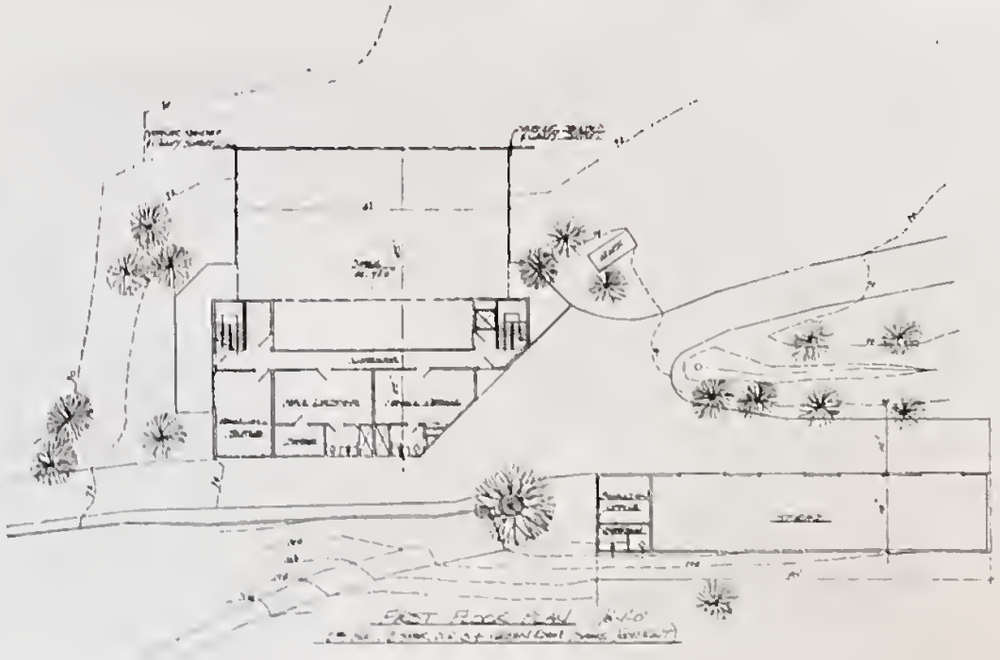


Fig. 5.1.14 – Proposed Stage Plan.

rooms), a green room for pre-performance preparation, selected storage for large and/or awkward items (such as a piano). Each dressing room will also be equipped with a restroom and shower. The green room will have a small kitchenette. An elevator for ADA access can be accommodated in one corner of this structure.

A second building (located southeast of the new stage) will accommodate additional storage. This structure will be in the approximate location of the existing dressing rooms and will be primarily used for storing seasonal items (i.e. picnic tables, benches). It will also accommodate a small office and a restroom for the concert staff during concert setup and performances.

Both structures will be of a similar character and material. A simple design with a rustic, natural character blends the structures into the naturalistic setting. Vertical wooden siding will be used on both the stage and storage buildings (See Figure 5.1.13).

The perimeter of the meadow will also be better defined. This will allow for better control and access. It will help maintain crowd size and better direct people during and after concerts.

PINE LAKE

Overview

Pine Lake and its banks is a candidate Significant Natural Area under the Recreation and Park Department's Natural Areas Program*.

As part of the Natural Areas Program improvements, careful pruning and selective removal of eucalyptus will allow light to reach the now shaded bank, and help foster the re-establishment of native under story vegetation to provide habitat cover and reduce erosion into the lake.

Along the south bank, 10-12 eucalyptus trees will be considered for pruning to allow more light infiltration, and as a secondary strategy it is estimated at this time that up to 5 trees may be removed to supplement the pruning efforts. Removed eucalyptus trees will be replaced with an under story of mostly native tree species that will help stabilize the steep slope.

Around the lake edge, a low, temporary vegetation establishment fence will be installed for a period of 3 to 5 years until continuous, healthy bank vegetation is re-established. Lake access will be maintained at an new overlook area at the east end of the lake, and at an additional location near the west end of the lake.

Fig. 5.3.1 – Photo of existing lake.

*The Recreation and Park Department, together with a citizen task force (Natural Areas Program Citizen's Advisory Committee), is currently in the process of formulating the Significant Natural Resource Area Management Plan that will contain guidelines for the Natural Areas Program work throughout the city. The implementation of improvements associated with this Recommendations Report will be coordinated with the Natural Areas Program Management Plan as it becomes finalized and approved by the Recreation and Park Commission.

Additional improvements should be made to enhance the overall health of the lake, bank vegetation and stabilization, and circulation and access around the lake.

A general discussion of these improvements are presented below.

For additional detailed information on lake habitat, rehabilitation, and lake area erosion control, please refer to Chapter 2 – Park Landscape: Section 2.2 – Erosion Control; Section 2.4 – Lakes and Water Features; Section 2.5 – Wildlife Habitat; and Section 2.7 – Signage.

Pine Lake and Pine Lake Water Source

Overview

As a unique natural resource and a jewel within Stern Grove and Pine Lake Park, Pine Lake is in need of attention.
(The condition of the lake is discussed in detail in section 2.4 – Lakes and Water Features.) Due to urbanization and without naturally occurring recharge from runoff, the lake water level has dropped significantly. Invasive aquatic plants now cover two-thirds of the lake surface and other invasive, non-native plants are out competing native bank vegetation. Although the lake and surrounding banks provide value for wildlife, improvements are needed to ensure that Pine Lake flourishes as a unique natural and cultural resource.

Recommendations

Pine Lake is the focal point of Pine Lake Park and the improvements made here will be primary to the overall health and ambience of the Park. The level of the water will be raised approximately four feet and the vegetation in the lake will be evaluated and balanced so that it helps to clean the lake as well as feed and provide protection for the aquatic wildlife. Vegetation along the edges of the lake will also be promoted to provide a natural

Fig. 5.3.2 – Sketch of existing lake.

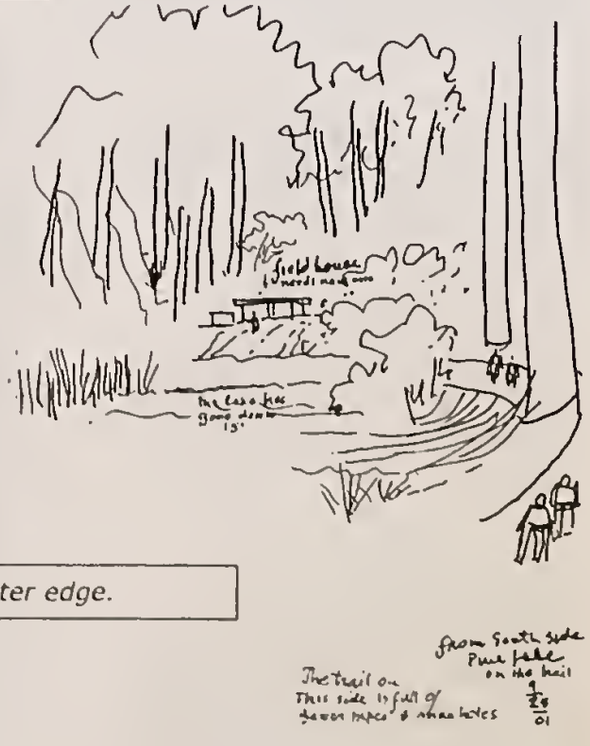


Fig. 5.3.3 – Sketch of existing water edge.

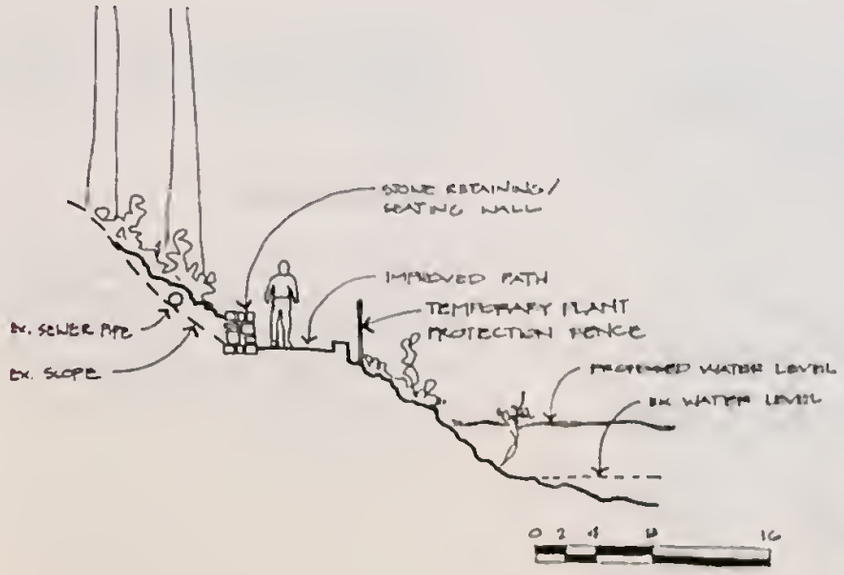


Fig. 5.3.4 – Sketch of proposed path and retaining wall.

Fig. 5.3.7 – Plan of proposed ha-ha fence at boundary of off-leash dog area.

edge habitat and some screening of the view of the houses above.

The path around the lake will also be improved. The northern pathway will be ADA accessible. The southern edge will be improved and leveled and small stone retaining walls will be built where necessary to provide some seating opportunities and allow for backfilling over exposed pipes.

Near the southeastern edge of Pine Lake a small creek will emerge low on the hillside.

This is where new water will be introduced into the Lake. The water will come from the well near the parking lot, and from seasonal run-off. The emerging creek will have a character similar to that at the source for the small pond in front of the Trocadero. The water will emerge from a natural stone outcropping and will run a short distance into the lake. A small bridge will cross the creek where it intersects the pathway around the lake.

Finally, near the eastern edge of the lake, a small access overlook area will be developed. This will allow a safe place for park users to rest, to get close to the water, to watch the wildlife, to practice casting, and to enjoy the vista.

Dogs will not be allowed to run free around the lake. A shielded

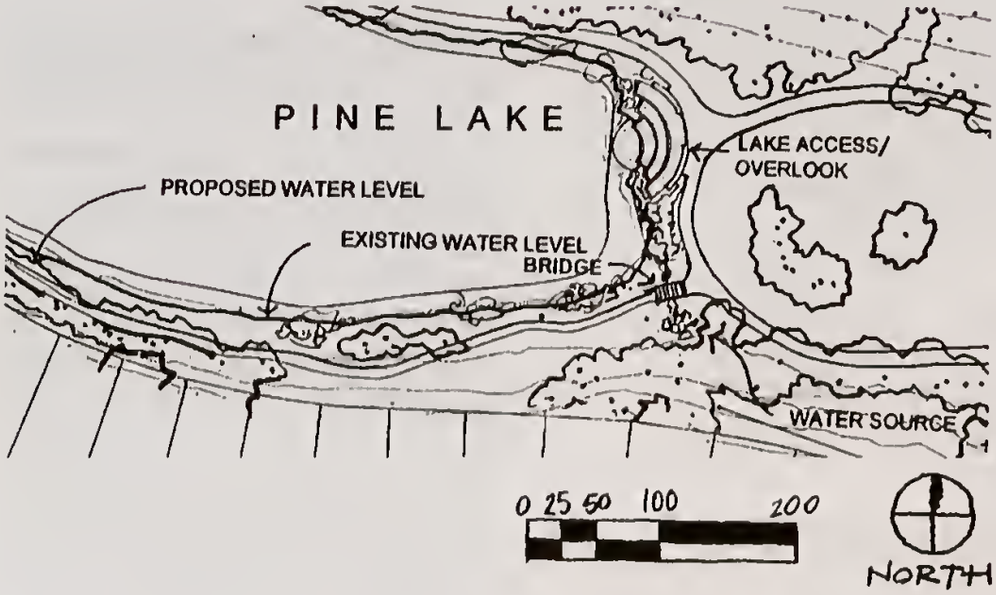


Fig. 5.3.5 – Plan of proposed overlook and water source.

fence (called a ha-ha) will be built across the meadow to mark the beginning/end of the off leash area

Conclusion

Pine Lake Park is a unique natural resource that requires protection from the threat of degradation and destabilization that the demands of the adjacent urbanized landscape pose.

Fig. 5.3.6 – Plan of proposed overlook and water source.

Fig. 5.3.7 – Sketch of proposed water source and bridge.

BUILDINGS AND STRUCTURES

New Buildings, Structures and Renovations
Building Electrical Systems
Building Plumbing, Fire Sprinkler and HVAC Systems
Hazardous Materials Remediation and Removal

BUILDINGS AND STRUCTURES

Overview

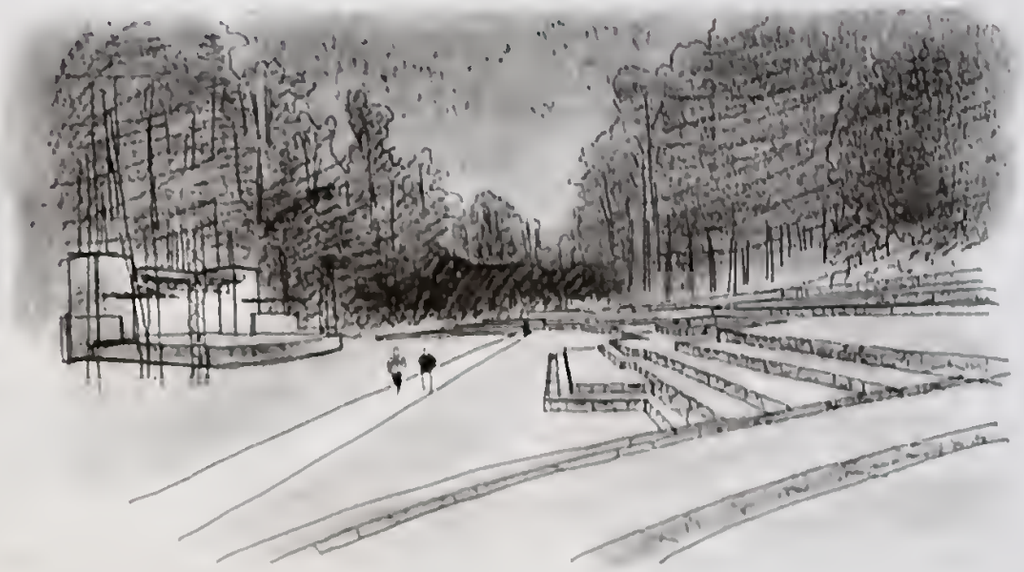
Stern Grove and Pine Lake Park contain buildings and structures that range in function from utilitarian, to service, to amenity and performance venue.

Many park buildings, including their associated infrastructure, are in poor condition and do not meet current codes, or use requirements. In many cases replacement buildings are proposed, and in some cases, renovations are in order.

This chapter includes the following:

6.1 New Buildings, Structures and Renovations
6.2 Building Electrical Systems
6.3 Building Plumbing, Fire Sprinkler & HVAC Systems
6.4 Hazardous Materials Remediation and Removal

NEW BUILDINGS, STRUCTURES AND RENOVATIONS



Overview

Several new buildings are proposed to provide modern facilities for use by both visitors and park staff.

It is proposed that the run-down Pine Lake Field House be demolished, and a new Field House be constructed to better serve a range of uses, including the Pine Lake Day Camp.

The Trocadero Clubhouse is in need of renovations to ensure that this historic park building will be preserved into the future, and will better accommodate a range of uses for enjoyment by all.

Park maintenance staff will be greatly assisted by the construction of a new, main maintenance facility in the center of the park valley. A smaller, adjunct facility is also proposed near the Wawona/21st Avenue park entrance.

The existing restrooms near the Children's Playground will be replaced with a new, modern facility, which will be in a new, more accessible location.

The original Concert buildings and stage do not adequately serve the needs of performances and events. All the performance related building will be replaced, including a new stage, backstage building, dressing rooms, and storage facilities.

This section includes the following:

A. Pine Lake Field House
B. Trocadero Clubhouse
C. New Maintenance Facilities
D. New Public Restrooms at Sloat Boulevard
E. New Concert Buildings (See Section 5.2 - Special Areas)

PINE LAKE FIELD HOUSE AND BARBEQUE AREA

Overview

The current Field House was designed in 1956. It was intended for summer use by children's groups as well as a variety of other outdoor activities. The original building is approximately 800 sq. ft. and accommodates a small director's office, kitchen/food service area, storage area, utility room, and men's and women's restrooms. A small addition (24' x 9'-2") later expanded the kitchen and storage areas. There is also an adjacent barbecue area and a campfire ring with wooden benches.

The Field House is located on the east shore of Pine Lake. Children who sign up for the weekly summer camps participate in a variety of activities, including arts and crafts, nature walks, lawn play, campfires, and special events.

Although the Field House was expanded at some point, the expansion resulted in the loss of direct access to the sewage ejector room and a torturous access to the playground equipment storage room. The

existg. house
Pine Lake
replace the field house. move to another location.
VISTA from the VALE parking lot TO PINE LAKE
9/25/01

Fig. 6.1.1 – Halprin sketch of Pine Lake with Field House in the distance.

restrooms are not in good condition and the Field House picnic area, and campfire areas do not meet current ADA accessibility requirements. The overall condition of the lawn and lakeshore in the immediate area is poor.

It should also be noted that the location no longer seems appropriate. The Field House is far from the parking lot and in the middle of a high profile activity area. The circulation pattern is awkward in this vicinity because large numbers of pedestrians, cyclists, and dog walkers cross paths as they circumnavigate the Park and or the Lake.

Parents who need to drive their children to the camp are limited to a service road, which is also currently the pathway used by most walkers. In addition, the large adjacent Pine Lake Meadow has become a much used exercise venue for dogs. And, the dogs also cross through the children's area as they chase balls, gophers, or one another.

In summary, the building is outdated and the location is exceedingly awkward as a summer camp for children.

Recommendations for Improvements

The PIP recommends moving the Field House & Barbeque area closer to the parking lot and snuggling it up against the south hillside. This location will keep the facility out of the view corridor and major pedestrian flow. At the same time, it will provide a safer location for the children and good views out.

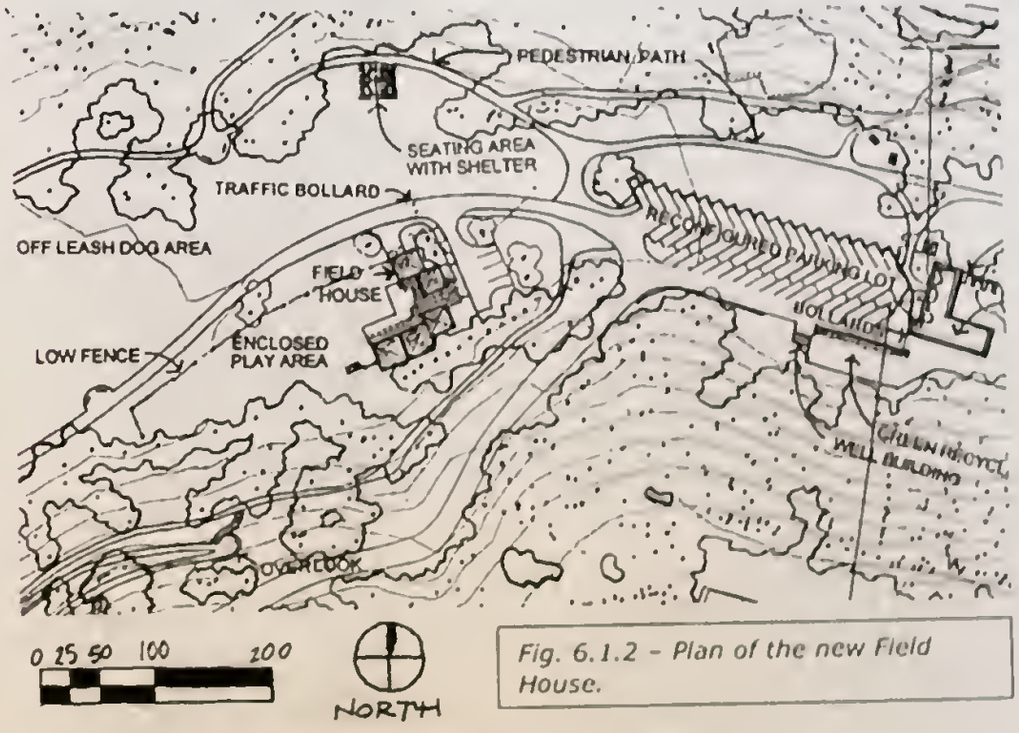


Fig. 6.1.2 - Plan of the new Field House.

In addition, this location provides sufficient room to construct a larger building (approximately 2,600 sq. ft.) with a slightly expanded program. It would include a multi-purpose meeting room and adequate new restrooms. A meeting room has been requested for a variety of community uses. Adequate new restrooms for the western end of the Park are strongly recommended and, in this new configuration, restrooms for the Field House could be separate from general restrooms for the park. The building would also include a small office for the manager, utility room, janitorial closet, a kitchen, and a general storage area.

In this new location, most children can easily walk from the reconfigured parking lot. Disabled and special needs children can be driven the short distance and a small number of disabled parking spaces will be available behind the building.

The outside activity area (barbeque, tables, lawn) should also be protected. This can be provided by a low fence, which will run lengthwise (east/west) near or alongside the south edge of the service road. This fence will connect to the eastern end of the Field House so as to allow park users direct access to restrooms. Separate restrooms will be available to the children inside the facility or to groups who are using the meeting room/barbeque for special events. The fence will also form a protective privacy boundary for groups who rent the meeting room for a special event.

When considering the Park as a whole, it is important that the distribution of buildings, meeting venues, parking areas, and services be balanced. With this Field House facility in the Pine Lake Meadow, the Trocadero near the eastern parking lot and the Stern Grove Concert Meadow in the middle, the park will have the possibility of simultaneous events in various venues.

TROCADERO CLUBHOUSE

Overview

As previously described in the assessment, the building is vintage 1892. A renovation and seismic upgrade project was completed in 1987. The seismic work included foundation bolting, hold-downs and new shear walls on the main floor. The main access to the building is from a lower parking lot, however the sloping driveway is too steep to conform to the maximum 8% slope required for ADA accessibility. In 1987 a wood framed porch deck with balustrade was added along the building frontage. It has deteriorated beyond repair due to heavy foot traffic and moisture rot, the later of which has occurred in significant portions.

Recommendations

Following is a list of the proposed upgrades and improvements to the Trocadero Clubhouse:

1. A new ADA compliant path is required from the existing Stern Grove Parking Lot (Esplanade) to the Trocadero building entrance. Currently there is no accessible path connecting the two. A new ramp will connect the Esplanade, the main path from the Concert meadow Terraces, the new **Restrooms** and the new **Deck.**

2. The existing wood porch with associated wood framing, balustrade, and ramp and Ladies' Convenience Station Restrooms will be demolished for replacement with a new **Deck**, ramp, and stairs.

3. The new **Deck** will be approximately 2000 square feet and will be (approx.) at the same level as the finish floor of the Trocadero. It will be reached by means of ADA accessible path from the Esplanade and the new interconnecting path to the Concert Meadow. The existing underground restroom to the west of the Trocadero will be demolished to accommodate the new ramp and pathways to the Concert Meadow. The Deck will extend from the Trocadero's south porch to the west. The Deck will serve as an outdoor multipurpose space. It will provide space for large gatherings (weddings, bar mitzvahs, meetings, parties, etc.) The Deck and banister should be constructed out of wood* to match the Victorian style of the Trocadero. (*Alaskan Yellow Cedar is recommended).

4. The Trocadero will be remodeled to provide two interior ground floor accessible restrooms for public use. The Men's Restroom to have as a minimum requirement 1 WC, 1 urinal, and 1 lavatory. The Women's Restroom to have as a minimum requirement 3 WC's and 1 lavatory.

5. The Trocadero will receive several improvements and repairs, in addition to the new ADA restrooms previously described. These include some new wall and floor finishes, plaster repair, and miscellaneous trim, flashing, door, window, hardware and finish repair.

6. The Trocadero's fireplace will be demolished and rebuilt with a reinforced concrete and CMU core. The interior and exterior finish will be charcoal gray 'basalt', rubble cut.

7. The existing **Kitchen** will receive a new

refrigerator/freezer, new casework, new lighting, and repairs to the range hood and fire suppression system.

8. The two wood columns in the **Recreation Room** will be removed by reframing the floor of the Second Floor above. (These two columns significantly reduce the flexibility and aesthetics of the room. One of the columns sits directly in front of the stone fireplace and hearth.)

9. The Trocadero will need additional telephone jacks and communication/data jacks at locations to be determined.

10. The building needs a thorough cleaning inside and out.

11. The building will be painted inside and out.

NEW MAINTENANCE FACILITIES

(See Figures - 6.1.3, 6.1.4)

New Corporation Maintenance Yard Building

1. Located adjacent to the Pine Lake Parking Lot. This area has advantage of being centrally located.

2. The building will serve as the main maintenance building for the park. The building will house maintenance equipment and supplies for the park and its buildings, excluding equipment and supplies used by the *The Stern Grove Festival Association* *, but including some common supplies and the equipment used to maintain the upper hill area (at the northeast corner of Wawona St. and 19th Ave., as described above).

3. New building to provide space for the following:

Equipment and Casework	***Min. Space Req.***
2 ea. Toro "Workman 3200" utility vehicles	8' x 10' = 80 sf
2 ea. ¾ ton full size ext. cab truck w/ lift gate	14' x 20' = 280 sf
1 ea. row boat on trailer for Pine Lake	4' x 12' = 90 sf
4 ea. 21" mowers	8' x 8' = 64 sf
2 ea. 52" riding rotary mowers	8' x 10' = 80 sf
1 riding aerator	4' x 6' = 24 sf
1 ea. gas powered generator	3' x 2' = 6 sf
2 ea. Drag matts	6' x 4' = 24 sf
2 ea. tillers	4' x 4' = 16 sf
Rack space for one kayak for Pine Lake	12 lf x 3' = 36 sf
Rack space for storage of mower brushes, verticutters, and reels	15 lf x 2' = 30 sf
Rack storage for 1" hoses and "Rainbird 65" sprinklers	20 lf x 2' = 40 sf
Rack storage gardening power tools (chainsaws, weed eaters, etc.)	10 lf x 2' = 20 sf
Rack storage for hand tools (shovels, trowels, racks, etc.)	30 lf x 1' = 30 sf
Rack storage for irrigation pipe & fittings	20 lf x 2' = 40 sf
Rack storage for plumbing pipe & fittings	10 lf x 2' = 20 sf
Rack storage for temporary orange roll fencing	10 lf x 2' = 20 sf
Rack storage for truck ramps	6 lf x 2' = 12 sf
(Cont.) Equipment and Casework	***Min. Space Req.***
Work bench with upper and lower cabinets, vice, peg board for tools w/ full illumination	40 lf x 3' = 120 sf
Work area in front of work bench	40 lf x 5' = 200 sf
Separate room for gasoline can storage: 12 ea. 5 gal. cans	10' x 10' = 100 sf
Office for Park Supervisor, enclosed, southeast exterior exposure	12' x 16' = 192 sf
Unisex Restroom with shower	10' x 12' = 120 sf
Storage Room for park restroom supplies and light bulbs	12' x 12' = 144 sf
2 ea. office work areas'	2 x 8' x 12' = 192 sf
Subtotal:	1,980 sf
Circulation, wall thickness & work space	40% x 1,980 = 792 sf
****Total:***	**2,772 sf**

** The Stern Grove Festival Association will provide separate building storage facilities to secure furniture and equipment used for events.*

New Corporation Maintenance Yard

1. New Corporation Maintenance Yard to be located at the east end of the existing Pine Lake Parking Lot, and facing the front of the new Maintenance Yard Building.

2. Yard to be separated from public parking area by landscaping, fencing and gate.

3. Yard to include open backstop niches for storage of soil, gravel, bark, and sand.

If space permits, yard to include space for trash and recycling dumpsters with an adjacent truck turn around.

New Upper Hill Maintenance Facilities, Wawona St. & 19th Ave.

A. Demo existing stucco garage building and remove storage containers to improve sight lines and aesthetics of the park entrance at Wawona St. and 20th Ave. Locate new Maintenance building west of existing structures and west of the existing stone stair (which will be renovated).

B. Existing 290 sf garage is insufficient for current and future needs of maintenance staff.

C. The new facility must also serve Carl Larson Park (at 19th Ave. between Wawona St. and Ulloa St.), since there is no maintenance facility there.

D. New building to provide space for the following:

Equipment and Casework	***Min. Space Req.***
1 ea. ¾ ton full size cab truck w/ lift gate	7' x 20' = 140 sf
2 ea. Toro "Workman 3200" utility vehicles	8' x 10' = 80 sf
1 ea. Toro Triplex mower for Croquet Greens	5' x 8' = 40 sf
6 ea. 21" mowers (2 for Larson Park, 2 high wheel, 2 low wheel)	8' x 10' = 80 sf
2 ea. 52" riding rotary mowers	8' x 10' = 80 sf
Rack space for storage of mower brushes, verticutters, and reels	15 lf x 2' = 30 sf
1 riding aerator	4' x 6' = 24 sf
1 ea. gas powered generator	3' x 2' = 6 sf
Rack storage for 12-1" hoses and 40 "Rainbird 65" sprinklers	10 lf x 2' = 20 sf
Rack storage for tools (weed eaters, shovels, trowels, rakes, etc.)	20 lf x 1' = 20 sf
Work bench with upper and lower cabinets, vice, peg board for tools w/ full illumination	20 lf x 3' = 60 sf
Work area in front of work bench	150 sf
Grounds supplies: 120 sacks (60 lbs.) of seed, fertilizer, & milorganite, stacked on 4 wood pallets	200 sf
Separate room for gasoline can storage: 12 ea. 5 gal. cans	80 sf
Separate room for "Project Insight," supply storage	200 sf
Unisex Restroom with shower	10' x 12' = 120 sf
(Cont.) Equipment and Casework	***Min. Space Req.***
*Exterior backstop enclosure for sand storage **	*10' x 10' = 100 sf*
Subtotal:	1,330 sf
Circulation, wall thickness & work space	50% x 1,330 sf = 665 sf
Total:	**1,995 sf**

** This area is an exterior space and therefore is not included in enclosed building area.*

NEW PUBLIC RESTROOMS AT THE SLOAT BOULEVARD AREA

(See Figure 6.1.5)

Overview

There is an existing inaccessible 316 square foot public restroom, which serves the active use areas along Sloat Boulevard. The area contains the Horseshoe Pits (8 Pits, 600 sf), the Francis M. McAteer Tennis Courts (2 ea.), the Golf Putting Green, the Children's Play Area (3000 sf), and the East Meadow. These areas are reached by three separate Park Entrance locations along Sloat Blvd.

Description

The existing public restroom building is assumed to have been a WPA 1930's project. It is constructed of poured in place exterior concrete walls 10 feet high. It has two WC's and two lavatories in the Women's Restroom and two WC's, one urinal, and one lavatory in the Men's Restroom. There is a Utility room between the two restrooms, which measures approximately 8 feet by 9 feet. The building is in good condition with some repairs needed.

This existing building is located north of the northeast corner of the existing Golf Putting Green. (See page 4.2-5). The access to the restrooms are by two downward sloping asphalt paths from the east and west. The paths are too steep to comply with the maximum allowable ADA slope of 1:12 or 8%. The restroom building's concrete entrance alcoves are too narrow for ADA compliance, and the space inside the restrooms are too small and narrow for ADA clearance requirements. ADA required alterations to the building would be significant and expensive. A new accessible path from the Children's Playground would have to accommodate a 42 feet difference in elevation. This path would be 605 feet long at a 1:12 slope. It would be both impractical and costly to make the existing restroom and access to it ADA compliant.

Recommendation

A new accessible Public Restroom building will be built to serve the Sloat Boulevard Area. Following is a list of programmatic recommendations for the new restroom building:

1. The location for the new Public Restroom will be along the relatively flat pathway east of the existing Children's Playground and north of the East Meadow.
2. The new Women's Restroom will be ADA accessible and have 4 WC's and 2 lavatories.
3. The new Men's Restroom will be ADA accessible and have 2 WC's, 2 urinals and 2 lavatories.
4. The restrooms will be lockable and secure after hours.
5. The interior finishes will be full height wall tile. Floor material will be stained concrete with a cove base and sloped to drain.
6. The exterior finish will be charcoal gray "basalt" natural stone veneer over CMU masonry walls. The roof will be center pitched open heavy timber beam with exposed tongue and groove wood decking.
7. Screened and secure window openings will provide natural ventilation and light.
8. The building area will be approximately 745 square feet.

The new restroom building will allow the existing restroom building to be converted to a **Gardener's Storage** building.

Fig. 6.1.3 – New Corporation Maintenance Yard & Building

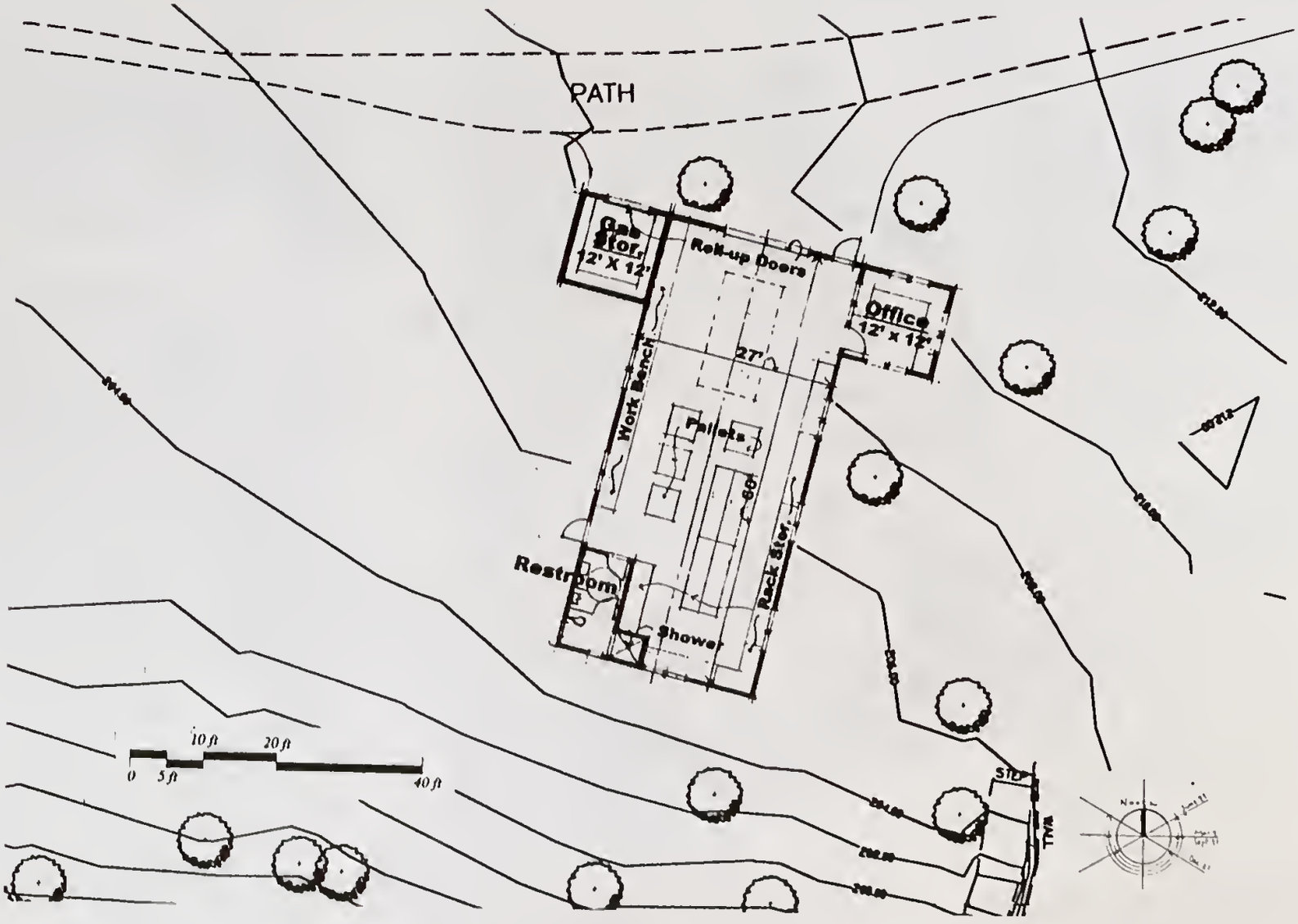


Fig. 6.1.4 – New Upper Hill Maintenance Facilities at Wawona Street & 19th Avenue

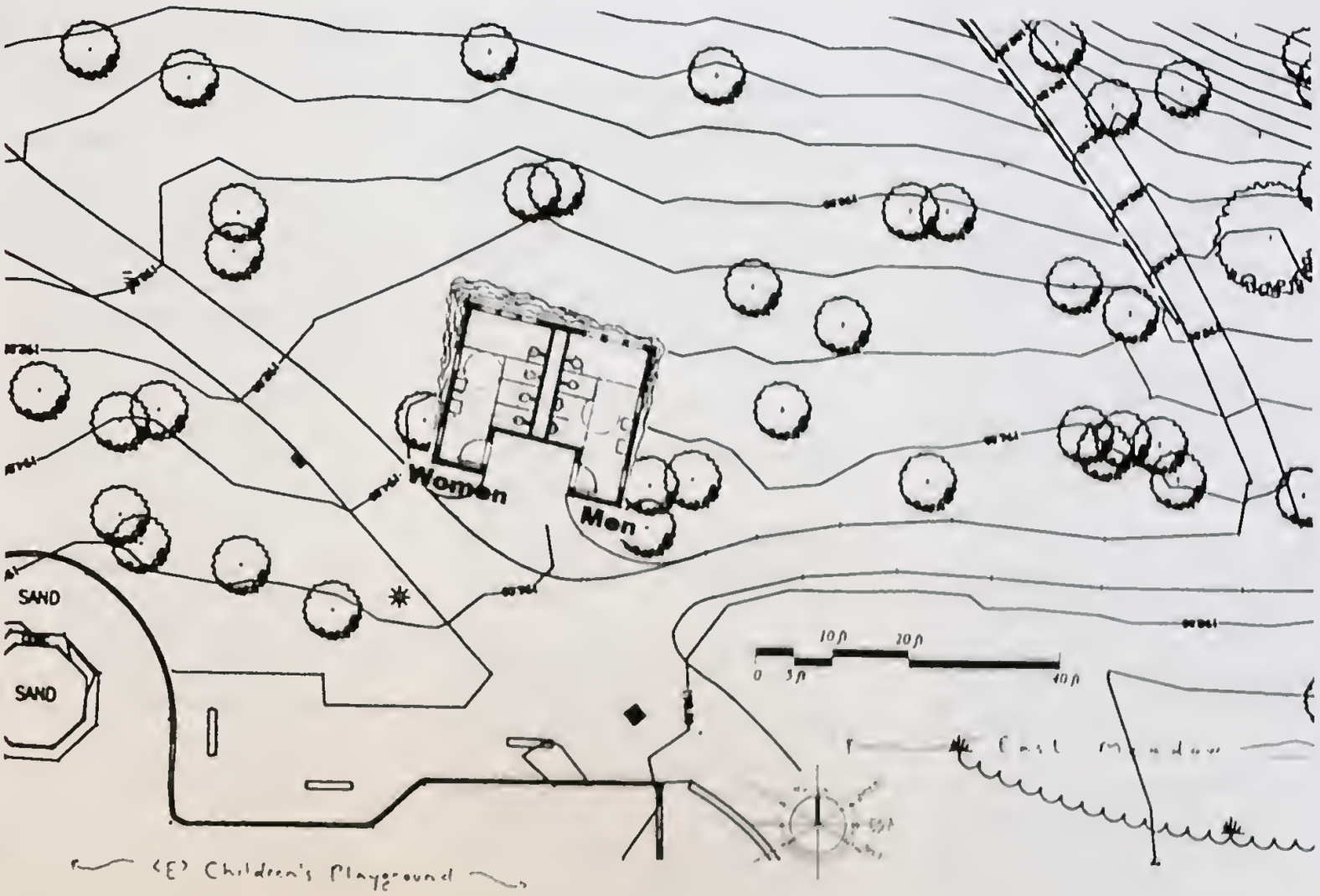


Fig. 6.1.5 – New Public Restrooms at the Sloat Boulevard Area

BUILDING ELECTRICAL SYSTEMS

Overview

There are various separate electrical power supplies to Stern Grove and Pine Lake Park. Some of these are very old and need to be replaced while others are new. This section identifies the locations of these, provides a summarized assessment of the electrical system and the condition of electrical equipment in each building to remain, and provides recommendations for improvements as well as identifying service requirements for proposed new buildings. For a more detailed assessment of existing buildings refer to the Site Assessment Report. The assessment is based on visual inspections. No tests or investigative demolition were performed to verify conditions.

This report covers buildings with electrical service. Each building in this section of the report is discussed separately first in the Description section and then in the Improvement Recommendations section. This report does not cover the PUC/WPC sewage lift station located at the western end of the park, which handles residential sewage.

Description

Stage, Performance Platform, Storage Shed, Dressing Rooms, and Men's Restroom and Storage Building
These buildings are recommended for demolition. (A new Stage and Performance building will be constructed which includes; Dressing Rooms, Green Room, Restrooms, and Storage).

Women's Underground Restroom
This building is recommended for demolition.

Men's Underground Restroom
This building is recommended for demolition.

Sigmund Stern Grove Club House "Trocadero"
Field inspection reveals underground electric service to the Trocadero likely originates from a PG&E pole on Wawona Street and 21st Ave. The incoming service enters a PG&E meter in the Garage. (Refer to Garage portion of this report below). The service is then routed from the Garage down to the Trocadero basement. The service size, 200 Amps, is adequate.

The incoming conduit to the basement is rusted and deteriorated to the extent of bringing in water to the basement, a hazardous condition. The electrical panels in the basement are outdated and not code compliant. There are insufficient panels to serve the needs of the building.

Power is distributed from panels in the basement to various loads in Trocadero as well as to other buildings and for site lighting (See Section 7.4 - Electrical System).

The quantity of receptacles is insufficient. In certain areas such as around sink areas where there is a potential for an electrical hazard, receptacles are in violation of current codes.

Lighting levels are too low in some areas. Most of the lighting is incandescent, does not meet Title 24 requirements, and is not energy efficient. Emergency and exit lighting does not meet current code requirements.

In general, the power distribution system meets site needs but is old, deteriorated, and could pose a potential for a fire hazard.

Ladies Convenience Station, Restrooms
This building is recommended for demolition. (New Stern Grove Restrooms will be constructed).

Wawona Clubhouse
This building was renovated in 1997. Electrical distribution system is in good condition. The incoming service to the Wawona

Clubhouse is an overhead service from a PG&E pole on Wawona Street and 20th Ave. The incoming service panel is located outside the building. This panel serves another sub panel inside the building, which has no space remaining for additional circuits.

Lighting includes exterior lighting, and interior fluorescent and exit lighting. Light switching meets Title 24 requirements. Receptacles in kitchen are GFCI. Switch for exhaust hood and hood light is ADA compliant. There are insufficient receptacles in the office area.

This building houses a small irrigation controller. It is not hardwired. It is a plug-in type. The wiring to the remote control valves appears to be in good condition.

Garage
This building is recommended for demolition. (A new Garage and Maintenance Storage will be constructed).

Old Well House
This building is recommended for demolition.

Sewage Pumps Shed
This building is recommended for demolition. (A new Stern Grove Sewage Lift Station will be constructed).

New Well House
The incoming underground electrical service to this building is from the Sewage Pumps Shed. This is a new service and so may have eliminated some of the electrical supply concerns reportedly encountered when the pump was last tested in 1995. The pump is the only electrical load in this building. The control equipment appears to be in good condition.

Children's Playground Public Restrooms
This building is recommended for demolition. (A new Sloat Avenue Restroom will be constructed).

Pine Lake Field House
This building is recommended for demolition. (A new Pine Lake Park Field House will be constructed).

Building Electrical Systems Improvement Recommendations

Electrical Master Plan
New PG&E Service:
- At the new Sloat Ave Restrooms.
- At the new Garage and Maintenance Storage.
- Service Pedestals at any locations as required for Irrigation controllers and/or path lighting where there is no other electrical service nearby. (See Section 7.4 - Electrical System for Path Lighting)

Remove Existing PG&E Service:
- At Pine Lake Field House (recommended for demolition).
- At Trocadero via the Garage (Garage recommended for demolition).

Maintain Existing PG&E Service:
- At Wawona Clubhouse
- At existing 600A switchboard at Pine Lake Parking Lot

  This Service shall feed:
  - Trocadero including: the new Stern Grove Restrooms and existing Site Lighting (See Section 7.4 - Electrical System)
  - The new Stage and Performance Building
    - The new Stern Grove Sewage Lift Station.
    - The new Pine Lake Park Field House.
    - The new Maintenance Corporation Yard.
    - The reconstructed New Deep Well House.
    - Site Lighting for reconfigured Pine Lake Parking Lot (See Section 7.4 - Electrical System).

Buildings and Structures--Recommended for Removal

Stage, Performance Platform, Storage Shed, Dressing Room Building, and Men's Restroom and Storage Building
As part of the demolition of these buildings, the existing feeders to these buildings from Trocadero shall be disconnected, and exposed conduit and wiring removed. Underground conduit and wiring shall be abandoned in place. At the buildings all conduit wiring and electrical equipment shall be removed. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Women's Underground Restroom
As part of the demolition of this building, the existing feeders to this building from Trocadero shall be disconnected, and exposed conduit and wiring removed. Underground conduit and wiring shall be abandoned in place. At the building all conduit wiring and electrical equipment shall be removed. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Men's Underground Restroom
As part of the demolition of this building, the existing feeders to this building from Trocadero shall be disconnected, and exposed conduit and wiring removed. Underground conduit and wiring shall be abandoned in place. At the building all conduit wiring and electrical equipment shall be removed. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Ladies Convenience Station, Restrooms
As part of the demolition of this building, the existing feeders to the building from Trocadero shall be disconnected, and all conduit and wiring removed. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Garage
PG&E shall discontinue service to the Garage. As part of the demolition of this building, disconnect existing PG&E feeder to Garage, and remove exposed conduit with wiring. Underground conduit and wiring shall be abandoned in place. At the Garage all conduit and wiring and electrical equipment shall be removed. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Old Well House
As part of the demolition of this building, remove exposed conduit and wiring and any electrical equipment. Underground conduit and wiring shall be abandoned in place. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Sewage Pumps Shed
As part of the demolition of this building, the existing feeders from the 600A switchboard at the Pine Lake Parking Lot to the transformer outside the building shall be disconnected, and exposed conduit with wiring removed. Underground conduit and wiring shall be abandoned in place. Between the transformer and the building, and at the building all conduit wiring and electrical equipment shall be removed. The transformer outside the building can be salvaged. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Children's Playground Public Restrooms
As part of the demolition of this building, remove exposed conduit and wiring and electrical equipment. Underground conduit and wiring shall be abandoned in place. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Pine Lake Park Field House
PG&E shall discontinue service to this building. As part of the demolition of this building, disconnect existing feeder to this building, and remove exposed conduit with wiring. Underground conduit and wiring shall be abandoned in place. At the building all conduit and wiring and electrical equipment shall be removed. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards.

Buildings and Structures –New or to Remain

Stage and Performance Building (Dressing Rooms, Green Room, Restrooms, and Storage)
Electrical work within this building will be done by others. The Source of electrical service shall be from the existing 600A switchboard at Pine Lake Parking Lot as described in the Electrical Master Plan. If possible the existing feeder from the 600A switchboard should be used and conduit and wiring modified as necessary to service the new Stage and Performance Building. The existing Stage Area and Transformer shall be relocated as necessary. Electrical load requirements for the new Stage and Performance Building will be important in determining the adequacy of the existing size of the electrical service at the switchboard.

Sigmund Stern Grove Club House "Trocadero"
Discontinue Electrical service to Trocadero from the Garage, which is recommended for demolition. Disconnect existing feeder to Trocadero from Garage, and remove exposed conduit with wiring. Underground conduit and wiring shall be abandoned in place. Replace old electrical panels with new electrical panels. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards. Provide new feeder from the existing 600a switchboard at Pine Lake Parking Lot to Trocadero. Install additional receptacles, and GFCI receptacles where required by code. Replace existing exposed electrical wire mold with concealed conduit and wire. Install conduit, wiring, and circuit breakers as necessary to provide power to any new electrical equipment. Install energy efficient lighting, emergency and exit lighting as required by code.

New Stern Grove Restrooms
Source of electrical service for the restrooms shall be from Trocadero. Install new conduit and wiring from Trocadero. Install new electrical system to provide power to all new electrical equipment. Install receptacles and energy efficient lighting, as required by code.

Wawona Clubhouse
Replace existing panel at the gardener's storage room with a larger panel with more circuits. Install duplex receptacles and floor receptacles in office area.

New Garage and Maintenance Storage
Provide a new PG&E service to this building. Install new conduit for new service. PG&E to install service wiring. Service will likely be from Wawona and 21St Avenue, but exact service point location is to be determined by PG&E. Install new electrical system to provide power to all new electrical equipment. Install receptacles and energy efficient lighting, as required by code.

Maintenance Corporation Yard
Source of electrical service for this building shall be from the 600A switchboard at Pine Lake Parking Lot. Install new conduit and wiring from the switchboard. Install new electrical system to provide power to all new electrical equipment. Install receptacles and energy efficient lighting, as required by code.

New Stern Grove Sewage Lift Station
Source of electrical service for this new building shall be from the 600A switchboard at Pine Lake Parking Lot. Install new conduit

and wiring for electrical service. Install new electrical system to provide power to all new electrical equipment. Install receptacles and energy efficient lighting, as required by code. Electrical load requirements for the new Lift Station will be important in determining the adequacy of the existing size of the electrical service at the switchboard.

Existing New Well House
As part of the reconstruction of this building, the existing feeders to this building from the 600A Switchboard via the Sewage Pumps Shed shall be disconnected, and exposed conduit with wiring removed. Underground conduit and wiring shall be abandoned in place. At the building all conduit wiring shall be removed. Control equipment shall be salvaged. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards. Source of electrical service for this reconstructed building shall be from the 600A switchboard at Pine Lake Parking Lot. Install new conduit and wiring for electrical service. Install new electrical system to provide power to all new electrical equipment. Install receptacles and energy efficient lighting, as required by code. Electrical load requirements for the existing New Well House will be important in determining the adequacy of the existing size of the electrical service at the switchboard.

New Sloat Avenue Restroom
Provide a new PG&E service to this building. Install new conduit for new service. PG&E to install service wiring. Service will likely be from Sloat Boulevard near 21St Avenue, but exact service point location is to be determined by PG&E. Install new electrical system to provide power to all new electrical equipment. Install receptacles and energy efficient lighting, as required by code.

New Pine Lake Park Field House
Source of electrical service shall be from the 600A switchboard at Pine Lake Parking Lot. Install new conduit and wiring for electrical service. Install new electrical system to provide power to all new electrical equipment. Install receptacles and energy efficient lighting, as required by code. Electrical load requirements for the new Pine Lake Park Field House will be important in determining the adequacy of the existing size of the electrical service at the switchboard.

Miscellaneous

Relocation of 600A switchboard at Pine Lake Parking Lot
The reconfiguration of the Pine Lake Parking Lot will likely require the relocation of the existing 600A switchboard at the Pine Lake Parking Lot. This relocation will be coordinated with PG&E and Pacific Bell who must also relocate their transformer and pull box respectively. A new concrete pad for the equipment will need to be constructed at the new location. All conduits must be extended to the new transformer, switchboard, and Pacific Bell box locations. PG&E and Pac Bell will need to extend their wiring to the switchboard.

Irrigation
Provide power and communication for irrigation controllers throughout the park. Provide power pedestals if no electrical service nearby. Provide conduit and wiring from controller to master control valves and to remote control valves throughout the park.

Conclusion

The proposed demolition of many of the buildings in the park and the construction of new buildings, led to an evaluation of electrical service requirements. The Electrical Master Plan indicates at which locations electrical service can be preserved, at which locations new electrical service is required, and at which locations existing electrical service should be discontinued.

If a building is to be demolished the electrical equipment, conduits, and wiring must be removed or abandoned in accordance with applicable codes and standards. New buildings shall have new lighting and electrical systems, which meet all applicable code requirements. Existing buildings to remain shall be updated to meet current codes.

BUILDING PLUMBING, FIRE SPRINKLER & HVAC SYSTEMS

Overview

The building mechanical systems, including plumbing, fire sprinklers and Heating Ventilation and Air Conditioning (HVAC), are essential for the users of the many buildings in both Stern Grove and Pine Lake Park.

Overall, the plumbing fixtures and systems for the various existing buildings throughout both Stern Grove and Pine Lake Park are in adequate condition considering their age and the amount of usage by the public.

Except for a few buildings in Stern Grove, the plumbing fixtures are not in compliance with the Americans with Disabilities Act (ADA).

The plumbing, fire sprinkler and HVAC systems for the new buildings would be based upon the design of the building as recommended by the engineer/architect and the Codes in effect at the time of design and construction.

The Trocadero Clubhouse is currently the only building in either of the two parks that has a fire sprinkler system.

Fig. 6.3.1 - Trocadero Clubhouse

Recommendations for the Domestic Plumbing Systems

Stern Grove: Trocadero Clubhouse

Hot water heaters: It is recommended that the two existing natural gas fired hot water heaters be removed and replaced with new water heaters. The new units would lower the building's heating costs due to their higher energy efficiency ratings.

It is recommended that new water closets that are rated for low water consumption be installed along with new faucets on the existing lavatories.

Women's Underground Restroom

As part of the demolition of this underground restroom, the domestic water and sanitary piping to this building should be disconnected and capped at the valve box for the domestic water and at the nearest connection into the sewer main. At the building all conduit wiring and electrical equipment shall be removed. Demolition and disposal of piping and the interior fixtures and plumbing shall be done in accordance with the applicable codes.

Men's Underground Restroom

As part of the demolition of this underground restroom, the domestic water and sanitary piping to this building should be disconnected and capped at the valve box for the domestic water and at the nearest connection into the sewer main. At the building all conduit wiring and electrical equipment shall be removed. Demolition and disposal of piping and the interior fixtures and plumbing shall be done in accordance with the applicable codes.

Ladies Convenience Station, Restrooms
As part of the demolition of the Ladies Convenience Station Restrooms, the domestic water and sanitary piping to this building should be disconnected and capped at the valve box for the domestic water and at the nearest connection into the sewer main. At the building all conduit wiring and electrical equipment shall be removed. Demolition and disposal of piping and the interior fixtures and plumbing shall be done in accordance with the applicable codes.

Stage and Performance Building
Plumbing systems and fixtures: Provide as required by Code and as recommended by the building's architect/engineer during design as based on the building's size and occupancy. The building will also have showers and hose bibs.

Hot water heater: Provide as required by Code and as recommended by the architect/engineer during design based on the building's size and occupancy.

Stern Grove Restrooms
Plumbing systems and fixtures: Provide as required by Code and as recommended by the building's architect/engineer during design based on the building's size and occupancy for the restrooms.

The building is anticipated to have the following fixtures on the Men's side:

2 lavatories
2 urinals
2 water closets

The Women's side is anticipated to have the following fixtures:

2 lavatories
2 water closets

Hot water heater: Provide as required by Code and as recommended by the architect/engineer during design.

Sloat Avenue Restrooms
Plumbing systems and fixtures: Provide as required by Code and as recommended by the building's architect/engineer during design based on the building's size and occupancy for the restrooms.

Hot water heater: Provide as required by Code and as recommended by the architect/engineer during design.

Children's Playground Public Restrooms
This building will be closed to the public and reconfigured as a gardener's storage area.

The existing restroom fixtures for the women's side should be removed and the domestic water and sanitary pipe capped, where possible, in the walls or plumbing chases.

The men's side lavatory, urinal and water closet should be removed and replaced if warranted by Rec/Park for the use of the gardeners. A service sink could be installed in place of the existing lavatory.

Stern Grove Sewage Lift Station
It is recommended that a domestic water service be brought to the sewage lift station for supplying a service sink, hose bibs and an emergency eye wash/shower station.

Maintenance Corporation Yard
Plumbing systems and fixtures for restroom(s): Provide as required by Code and as recommended by the building's architect/engineer during design based on the building's size and occupancy for the restrooms.

It is also recommended that a service sink, hose bibs and an emergency eye wash/shower station be provided.

Hot water heater: Provide as required by Code and as recommended by the architect/engineer during design as based on the building's size and occupancy.

Garage and Maintenance Storage (Wawona)
Plumbing systems and fixtures for restroom(s): Provide as required by Code and as recommended by the building's architect/engineer during design based on the building's size and occupancy for the restrooms and showers.

It is also recommended that a service sink, hose bibs and an emergency eye wash/shower station be provided.

Hot water heater: Provide as required by Code and as recommended by the architect/engineer during design based on the building's size and occupancy.

Pine Lake Park: Pine Lake Field House
The building is slated for demolition. All domestic water connections shall be capped prior to entering into the building and sanitary facilities removed up to and including the sewage ejector pump system and the force main up to the manhole on the side of the hill. The two (2) pumps, flanged piping and controls should be salvaged and returned to Rec/Park.

Pine Lake Park Field House
Plumbing fixtures and systems for kitchen and restrooms: Provide as required by Code and as recommended by the architect/engineer during design based on the building's size and occupancy.

Service and activity sinks: Provide as recommended by the architect/engineer during design based on the building's proposed usage.

Hot water heater: Provide as required by Code and as recommended by the architect/engineer during design based on the building's size and occupancy.

Fire Sprinkler Systems

Stern Grove: Trocadero Clubhouse
Due to the wooden construction of the building and its historical significance, it is strongly recommended that the existing fire sprinkler system be brought up to current standards. During a site visit, no water flow alarm or local alarm for the sprinkler system was found either inside or outside the building.

Stage and Performance Building
It is recommended that a fire sprinkler system be installed in the building regardless of Code requirements.

Pine Lake Park: Pine Lake Park Field House
It is recommended that a fire sprinkler system be installed in the building regardless of Code requirements.

HVAC (Heating, Ventilation and Air Conditioning) Systems

Stern Grove: Trocadero Clubhouse
Building furnace: The furnace is reportedly adequate for heating the building, although its age will necessitate increasing numbers of repairs to keep it in operation. The thermostat is an antique and its workings could not be verified.

Because of the age of the furnace and its minimal efficiency when compared to current furnace models, it is recommended that a new furnace be installed along with a programmable thermostat. A new furnace would be more energy efficient and reduce the building's operating costs considerably during the cooler months.

An air conditioning unit is strongly recommended for cooling during the summer months when the building is in maximum use.

Kitchen: Although the kitchen has a commercial exhaust hood with a fire suppression system inside, it is undersized for the application and the fan motor stalls due to the heat when all the range burners are operating, causing a loss of

ventilation over the range when it is needed the most.

It is recommended that a new properly sized range hood with a fire suppression system and grease trap be installed to adequately ventilate the kitchen and remove the fumes produced during operation of the range.

Stage and Performance Building
Heating furnace and ventilation system: Provide as required by Code and as recommended by the architect/engineer during design based on the building's size and occupancy.

Maintenance Corporation Yard
Heating furnace and ventilation system: Provide as required by Code and as recommended by the architect/engineer during design based on the building's size and occupancy.

Garage and Maintenance Storage (Wawona)
Heating furnace and ventilation system: Provide as required by Code and as recommended by the architect/engineer during design based on the building's size and occupancy.

Pine Lake Park: Pine Lake Park Field House
Heating furnace and ventilation system: Provide as required by Code and as recommended by the architect/engineer during design as based on the building's size and occupancy. An air conditioning unit should also be considered for cooling during the summer months when the building is in maximum use.

Kitchen range and exhaust hood: Provide as required by Code and as recommended by the architect/engineer.

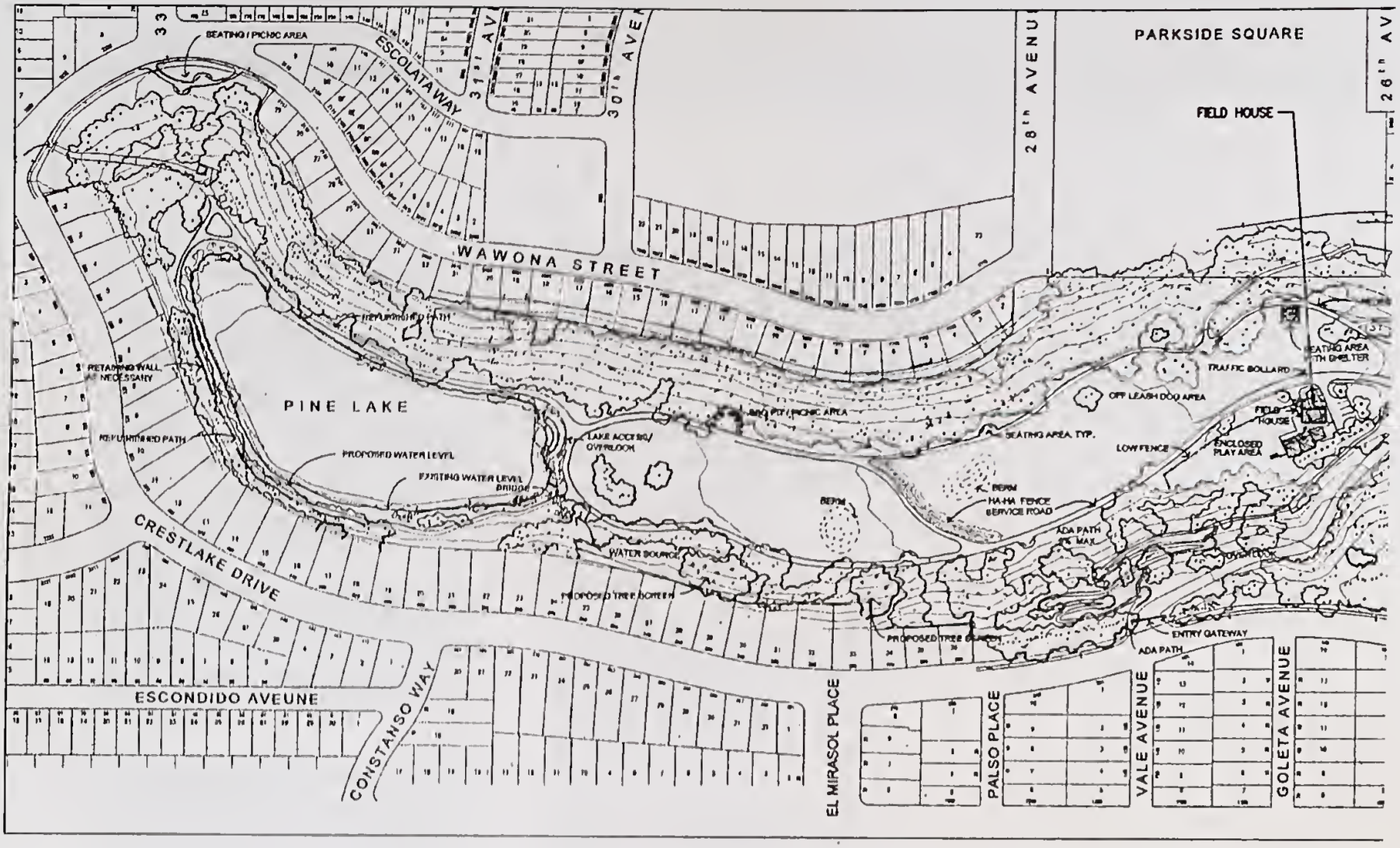
Conclusion

New buildings in both of the parks will require plumbing fixtures and mechanical equipment based on their proposed usage and as specified by the building's architect/engineer.

The Trocadero Clubhouse will require the existing fire sprinkler system to be upgraded.

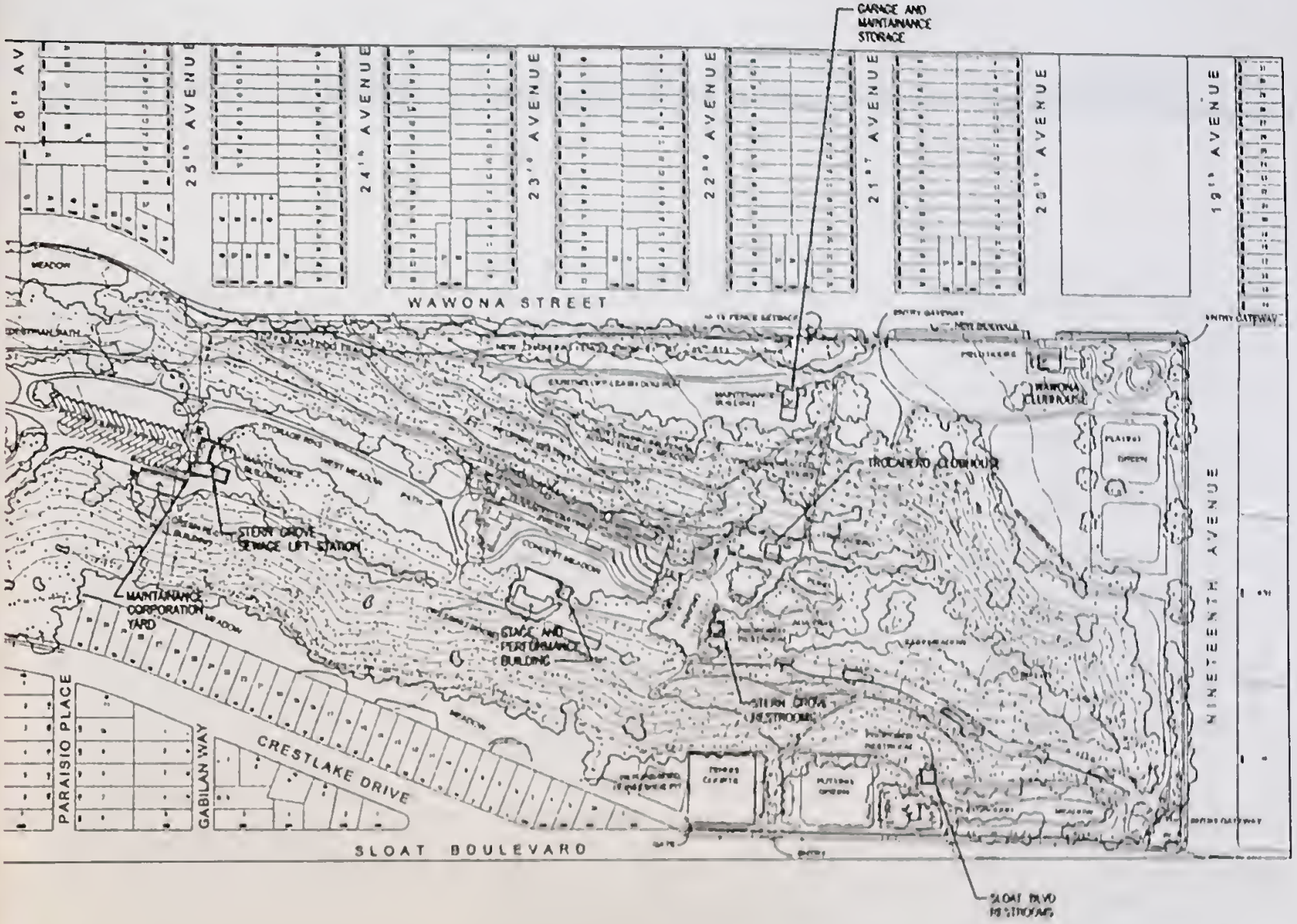
Fire sprinkler systems should be installed in buildings where there are numerous public gathering, even if not required by Code, in order to minimize any casualties from fire and to protect the park's buildings.

Emergency eye wash/shower stations and service sinks are recommended at locations where there is the possibility of Recreation/Park Department personnel coming into contact with raw sewage or where motor fuels and oils are used and transferred between vehicles and equipment.



General Recommendations

Upgrade existing plumbing and heating/ventilation systems in existing building. Provide new mechanical building systems for proposed buildings.



250' 125' 0 250' 500'

SCALE: 1" = 250'-0"

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STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN
BUILDING PLUMBING, FIRE SPRINKLER AND HVAC SYSTEMS
DRAWING NO. 6.3-A

HAZMATS REMEDIATION AND REMOVAL

Overview

Numerous Federal, State and Local regulatory agencies mandate the identification, removal and proper disposal of hazardous building materials prior to any demolition, renovation and construction work. The goal of this section is to make recommendations in order to comply with requirements from these corresponding agencies. To achieve this goal, a site assessment and its corresponding remediation plan needs to be developed.

The site assessment is a multi-phased process. Its first phase, mainly a review of existing historical land use records and regulatory lists and databases, complemented by visual site reconnaissance and interviews with Recreation and Park Department's personnel (R&P), has already been accomplished by the San Francisco Department of Public Works, Bureau of Construction Management, Site Assessment and Remediation Division (SAR) through Baseline Environmental Consulting. Its findings are reported in Baseline's Phase I Environmental Site Assessment for the Stern Grove and Pine Lake Park, 2001.

Concentrating on the buildings, structures and sites for future construction inside the site, this section summarizes the Hazardous Materials section in Baseline's Phase I report and discusses the following phases of the assessment and its corresponding remediation plan.

BUILDINGS, STRUCTURES AND SITES

Overview

Equal to approximately 15 city blocks long and 4 blocks wide, Stern Grove and Pine Lake Park are mostly landscaped with a large variety of trees and vegetation capable of isolating the visitors from the surrounding heavily trafficked life of the City. Among this peaceful and serene environment the twenty-two buildings and structures can be grouped into the following seven very distinctive conglomerates; each one taking its name from the most distinctive feature among its corresponding buildings and/or structures or from the facility the entire conglomerate sits on:

A. **Trocadero**: easily reached by taking the west driveway at the entrance off Sloat Boulevard adjacent to 19th Avenue, this conglomerate is composed of the following:
   1. Trocadero: also known as the Stern Grove Clubhouse.
   2. Trocadero's women's convenience station.

B. **Wawona Clubhouse**: located at the northeast corner of Stern Grove, this one-story facility can be easily reached from its main entrance at the south side of the corner between Wawona Street and 20th Avenue.

C. **Maintenance Garage**: situated north of the Trocadero and west of the Wawona Clubhouse, this conglomerate can be easily reached by the pedestrian gate along the south side of the corner between Wawona Street and 21st Avenue or by the north driveway beyond the Wawona Clubhouse. This conglomerate is composed of the following:
   4. Maintenance Garage.*
   5. Two metal storage containers.

   * **Please note that the numeral identifier for each of the buildings and structures listed in this section is in reference to its corresponding "Item ID #" given by the *Existing Structures***

***Summary* table discussed later.**

D. **Children's Playground**: located along Sloat Boulevard near the southeast corner of Stern Grove, this conglomerate is easily reached through Sloat Boulevard. Although this conglomerate is composed of more items, only those in the following list are part of this Hazardous Materials Study:
   6. Children's Playground.
   7. Stern Grove restrooms.

E. **Concert Meadow**: located east of the Trocadero is composed of the following:
   8. Men's and women's underground restrooms.
   9. Stage.
   10. Building 1.
   11. Building 2.
   12. Building 3.
   13. Power transformer.

F. **Service Yard**: just west of the Concert Meadow, this conglomerate consists of the following:
   14. Metal shipping containers.
   15. Transformer.
   16. Sewage lift station.
   17. The "Old Production Well".
   18. The "New Deep Well".

G. **Solid waste dumpsters**: all of which collectively, including the reported collecting dumpster, will be referenced as Item ID # 19 on the aforementioned *Existing Structures Summary* table.

H. **Pine Lake Park**: in the absence of a clear physical boundary between Stern Grove and Pine Lake Park, one can use the paved parking lot south of the service yard areas and accessible from Stern Grove as well as a driveway from Crestlake Drive as such boundary. Everything inside the site west of this parking lot is considered Pine Lake Park. Its conglomerate of buildings and structures is:
   20. Pine Lake Meadow.
   21. Pine Lake Field House.
   22. Pine Lake Park utility lines.
   23. Pine Lake Sewage Pump Station.
   24. Pine Lake Park monitoring well.

Site visits and a thorough review of the *Hazardous Materials* section of the referenced Baseline's report produced the *Existing Structures Summary* table attached to this section. This table compiles key information for each of the 22 buildings, structures or items with potential hazardous materials implications reported by Baseline, and includes 3 not-reported structures, Item ID #s 6, 7, and 8.

Site Assessment and Remediation Plan

Although Baseline's Phase I environmental site assessment report already identified most of the items with potential hazardous materials issues at the site, the *Existing Structures Summary* table will be expanded to include additional items or key information to complete the site assessment through the following:

A. Additional research through documents and regulatory databases review.

B. Additional interviews with R&P's personnel familiar with, and occupants or users of any of the listed items.

C. Conduction of a comprenhensive hazardous materials (HazMats) survey plan to identify HazMats in buildings, structures and sites scheduled for demolition, renovation and/or construction. This plan has the following two main components:

   1. HazMasts survey of existing buildings and structures: a collection of building or structure materials suspected of containing any of the following:
      a. Asbestos
      b. Lead
      c. Molds
      d. Mercury
      e. PCBs
      f. Arsenic

2. Testing at proposed new building locations: a collection of soil borings for testing of various potential contaminants such as serpentine at the following new building locations:
   a. Pine Lake Field House.
   b. Garage and Maintenance Storage.
   c. Maintenance Corporation Yard.
   d. Sloat Avenue Restrooms.
   e. Stern Grove Sewage Lift Station.

Once this information is gathered and reviewed, the environmental impact of the discovered HazMats on the overall project can be finally assessed, and its corresponding environmental remediation plan developed.

BUILDING, STRUCTURES AND SITES IMPROVEMENT RECOMMENDATIONS

Completion of Environmental Assessment

Complete the site assessment through the following:

- Additional research through documents and regulatory databases review.
- Additional interviews with R&P's personnel familiar with and occupants or users of any of the listed items.
- Conduction of a comprenhensive HazMats survey plan.

Development of Environmental Remediation Plan

Once the environmental site assessment is completed, develop its corresponding environmental remediation plan.

Existing Structures Summary Table

Because of limited space, the *Existing Structures Summary* table is broken down and presented in the following pages in two parts. For continuity purposes, we have repeated the first three columns on the left.

Upon completion of the soils testing for the new buildings/structures, this information will be incorporated into this table and reported through an appendix to this document.

EXISTING STRUCTURES SUMMARY, PART 1

CONGLOMERATE NAME	ITEM ID #	FACILITY/BUILDING/ STRUCTURE NAME	YEAR OF CONSTUCTION	STRUCTURE'S TYPE AND DESCRIPTION	STRUCTURE'S FUNCTIONALITY
Trocadero	1	Trocadero	1892	Wood-siding	Various
	2	Trocadero's Women's Convenience Station	Late 1940s	Wood-siding	Restroom
Wawona Clubhouse	3	Wawona Clubhouse	Post 1950	Unknown	Recreational
Maintenance Garage	4	Maintenance Garage	Post 1931	One-story Approx. 12' by 18' stucco siding	Stor., light Maint.
	5	Metal Storage Containers	Not Applicable	Unreported size, metal shipping containers located on burned shed's Conc. foundation	Storage
Children's Playground	6	Children's Playground	Post 1931		
	7	Stern Grove Restrooms			
Concert Meadow	8	Men's and Women's Underground Restrooms	Post 1931		
	9	Concert Meadow's Stage	Post 1931	Unspecified size, painted wood.	Performing Arts
	10	Concert Meadow's Building 1	Post 1931	Unspecified size, painted wood.	Various
	11	Concert Meadow's Building 2	Post 1931	Unspecified size, painted wood	Various
	12	Concert Meadow's Building 3	Post 1931	Unspecified size, painted wood.	Various
	13	Concert Meadow's Power Transformer	Unknown	Concreted pad of an unspecified size enclosed on a chain link fence	Utilities
Service Yard	14	Service Yard's Metal Shipping Containers	Not Applicable	Metal shipping containers of unspecified size	Equipment storage
	15	Service Yard's Transformer	Although unknown, it appears recently	Concreted pad of an unspecified size enclosed by a chain link fence surrounded by traffic bollards	Utilities
	16	Service Yard's Sewage Lift Station	On or before mid-1980's	One-story Approx. 10' by 12' wooden Bldg	Sewage pumping
	17	Service Yard's "Old Production Well"	Post 1931	One-story Approx. 5' by 8' stucco-sided building housing a 4' dia and 70-80' deep well	Fed Pine Lake in drought Yrs.
	18	Service Yard's "New Deep Well"	Early 1980s	Of unreported size, this small wood building houses a 14" dia and Approx. 270' deep well	Unknown
Solid Waste Dumpters	19	Solid Waste Dumpsters	Not Applicable	Unreported	Refuse disposal
Pine Lake Park	20	Pine Lake Meadow	Not Applicable	Open, grass-covered field of unreported size	Recreational
	21	Pine Lake Field House	1950s	Cinder block construction of unreported size	Rec & Storage
	22	Pine Lake Park Utility Lines (a power line and a water supply line)	Unreported	Not Applicable	Utilities
	23	Pine Lake Sewage Pump Station	Unreported	Painted concrete building Approx. 15' by 15'	Unreported
	24	Pine Lake Park Monitoring Well	Unreported	Identifying it by the approximate location of its christy box is the only reported description	Groundwater Monitoring

EXISTING STRUCTURES SUMMARY, PART 2

CONGLOMERATE NAME	ITEM ID #	FACILITY/BUILDING/STRUCTURE NAME	STORES CHEMICALS?	ACCESSED?	REPORTED COMMENTS
Trocadero	1	Trocadero	Yes	Yes	
	2	Trocadero's Women's Conv. Station	No	Yes	
Wawona CH	3	Wawona Clubhouse	No	No	
Maintenanco Garago	4	Maintonanco Garage	Yes, inside metal cabinet	Yes	
	5	Metal Storago Containers	Gasoline - Yes Others - Unkn.	No	
Children's Playground	6	Children's Playground			
	7	Stern Grove Restrooms			
Concert Meadow	8	Men's and Women's Undrg. Restrs.			
	9	Concert Meadow's Stage	No	No	
	10	Concert Meadow's Building 1	Unknown	No	
	11	Concert Meadow's Building 2	Unknown	No	
	12	Concert Meadow's Building 3	Unknown	No	
	13	Concert Meadow's Power transformer	No	Yes	
Service Yard	14	Service Yard's Metal Shipping Containers	No	Yes	
	15	Service Yard's Transformer	No	Yes	
	16	Service Yard's Sewage Lift Station	Unknown	No	
	17	Service Yard's "Old Production Well"	No	Yes	Informal tests have indicated that its die may increase considerably with depth. Const. Log unavailable.
	18	Service Yard's "New Deep Well"	No	Yes	Because the SFDPH will not permit it to operate until the Old Production Well is closed, this well hasn't been operated for years. Construction log unevailebte.
Solid Waste Dumptors	19	Solid Waste Dumspsters	Not Applicable	Yes	Although e refuse collection station is discussed, its location is not identified.
Pine Lake Park	20	Pine Lake Meadow	No	Yes	Field's fill material reported to contain garbage.
	21	Pine Lake Field House	Unknown	No	Field House
	22	Pine Lake Park Utility Lines (n power line and n water supply line)	Not Applicable	Yes	Running along the SW portion of the project site, the water line connects to the pump station below.
	23	Pine Lake Sewage Pump Station	Unknown	No	Need to be accessed.
	24	Pine Lake Park Monitoring Well	No	Unknown	Reportedly installed by either SFDPW or U.S.G.S. for not confirmed groundwater monitoring; unavailable construction log.

EXISTING STRUCTURES SUMMARY, PART 3

CONGL. NAME	ITEM ID #	FACILITY/BUILDING/ STRUCTURE NAME	ASBESTOS	LBP PRESENT?	OTHER ENVIRONMENTAL ISSUES
Trocadero	1	Trocadero	Roof penetration mastic (30 LF); Vinyl floor tile (200 SF); Aircell insulation (240 LF); Window putty (690 LF); Mastic & vapor barriers under hardwood floor (3450 SF-Assumed); Vapor barriers under slab (5700 SF-Assumed); Vapor barriers under bathrooms (650 SF-Assumed); glued on ceiling tiles & mastic (1050 SF); Terrazzo flooring (400 SF)	Yes	Other hazardous items noted: Mercury-containing fluorescent lighting tubes, PCB-containing ballasts, radioisotope smoke detectors
	2	Trocadero's Women's Convenience Station	Roof penetration mastic (20 LF); Window putty (30 LF)	Yes	Other hazardous items noted: Mercury containing fluorescent lighting tubes, PCB-containing ballasts
Wawona Clubhouse	3	Wawona Clubhouse	**	**	
Maintenance Garage	4	Maintenance Garage	Vapor barriers under slab (400 SF-Assumed)	Yes	Oil stains approx. 2 feet in diameter noted on concrete flooring
	5	Metal Storage Containers	None noted	Yes	
Children's Playground	6	Children's Playground	Not Applicable	Yes	
	7	Stern Grove Restrooms	Vapor barriers under bathrooms (340 SF-Assumed); Vapor barriers under slab (388 SF-Assumed); Window putty (10 LF)	Yes	
Concert Meadow	8	Men's and Women's Underground Restrooms	Roof penetration mastic (1 LF); Vapor barriers under bathrooms and on perimeter walls (2200 SF-Assumed); Vapor barriers on underground walls of building (1000 SF-Assumed)	Yes	
	9	Concert Meadow's Stage	None noted	Yes	
	10	Concert Meadow's Building 1	Rolled roofing (1000 SF); Vapor barrier under slab (1000 SF - Assumed)	Yes	
	11	Concert Meadow's Building 2	Rolled Roofing (1400 SF), Roof penetration mastic (15 LF), Transite flue (4 LF); Aircell insulation (5 LF), Expansion joints (80 SF); Wall drywall, tape & mud (200 SF), Vapor barrier under slab (1800 SF-Assumed)	Yes	SCA unable to access attic space. SCA assumes duct-work may be present in this area; however, area not quantified during the survey
	12	Concert Meadow's Building 3	Rolled Roofing (1200 SF), Roof penetration mastic (10 LF), beige exterior paint (900 SF); Vapor barrier under slab (1800 SF-Assumed)	Yes	Oil staining is evident on the concrete floors & gasoline has leaked from equipment.
	13	Concert Meadow's Power Transformer	None noted	Yes	
Service Yard	14	Service Yard's Metal Shipping Containers	None noted	Yes	Oil staining noted on wood flooring.
	15	Service Yard's Transformer	None noted	Yes	PCBs may be present in transformer oil
	16	Service Yard's Sewage Lift Station	Rolled roofing (200 SF)	Yes	Suspect PCB-containing Equipmt. & transformer noted. Oil staining noted on wood flooring.

CONGL. NAME	ITEM ID #	FACILITY/BUILDING/ STRUCTURE NAME	ASBESTOS	LBP PRESENT?	OTHER ENVIRONMENTAL ISSUES
	17	Service Yard's "Old Production Well"	None noted	Yes	
	18	Service Yard's "New Deep Well"	Rolled roofing (50 SF)	Yes	
Solid Waste Dumpters	19	Solid Waste Dumspsters	Not Applicable	Possible (not tested)	
Pine Lake Park	20	Pine Lake Meadow	Not Applicable	Not Applicable	
	21	Pine Lake Field House	Vinyl tiles and mastic (360 SF); Rolled roofing (2100 SF); Roof penetration mastic (30 SF); Vapor barriers under bathrooms (300 SF-Assumed); Vapor barriers under slab (2100 SF-Assumed)	Yes	
	22	Pine Lake Park Utility Lines (a power line nad a water supply line)	Not Applicable	Not Applicable	
	23	Pine Lake Sewage Pump Station	Vapor barriers under slab & perimeter walls (2800 SF-Assumed)	Yes	Oil staining noted on concrete floor.
	24	Pine Lake Park Monitoring Well	Not Applicable	Not Applicable	

*Not included in the Scope of Work for SCA's October 2002 survey.
Note: Quantities of window putty refer to perimeter of windows, not lineal footage of putty.
Note: Assumed materials not sampled, only assumed to contain asbestos.
For additional information regarding hazardous materials, refer to SCA's survey report dated March 24, 2003.

UTILITIES AND INFRASTRUCTURE

Water System
Sewer System
Sewer System Force Main Systems
Electrical System
Natural Gas System
Communication System
Park Lighting

UTILITIES AND INFRASTRUCTURE

Overview

Utilities and infrastructure includes the park water, sewer, electrical, natural gas, communication, and lighting systems.

All of these park systems are in need of upgrades and renovations. Although infrastructure components are seldom in the public eye, their proper function is vital for the health, safety and welfare of the park and park users.

This chapter includes the following:

7.1 Water System
7.2 Sewer System
7.3 Sewer System Force Main Systems
7.4 Electrical System
7.5 Natural Gas System
7.6 Communication System
7.7 Park Lighting

Fig. 7.0.1 - Exposed sewer line on the slope to the south of Pine Lake Meadow.

WATER SYSTEM

Overview

A reliable source of water for Stern Grove and Pine Lake Park is essential for both domestic and irrigation uses.

The majority of the existing piping for both Stern Grove and Pine Lake Park dates back to the 1930's, is in poor condition, is undersized for the parks' increasing uses and requires constant repairs to keep the systems operational for basic requirements. In addition, the Wawona Clubhouse and Pine Lake Park's domestic water supply are directly connected into their respective surrounding irrigation system's piping, presenting a possible health hazard, should back siphonage occur and contaminate not only the domestic water downstream, but also the domestic water mains.

The existing irrigation systems throughout the two parks and surrounding areas consists almost entirely of quick couplers, which require the gardeners to spend the majority of their time dragging hoses and portable sprinklers around the meadows and lawn areas to irrigate them. The only automatic sprinkler system is located at the Croquet Greens off Wawona Street and 19th Avenue.

Fig. 7.1.1 - Entrance Sign

Domestic Water Systems

Stern Grove: Piping – General
The Stern Grove domestic water system is fed from a bank of six 2-inch San Francisco Water Department (SFWD) water meters located at 21st Avenue and Wawona Street. Downstream of the water meter manifold, the line separates with a 4-inch diameter line feeding the existing 20,000-gallon underground concrete reservoir for irrigation use via a backflow preventer. A 6-inch diameter transite mainline for domestic water usage leads down to a concrete valve vault located behind the Ladies Convenience Station Restrooms and adjacent to the Trocadero Clubhouse in the Stern Grove valley.

The piping between the water meters on Wawona Street and 21st Avenue to the Stern Grove valley are approximately fifty years old with some of the existing connecting branch lines dating back well into the 1930's.
The piping and valves in the concrete valve vault are in good condition, having been replaced within the last five years by San Francisco Recreation and Park Department (Rec/Park) plumbers and stationary engineers.
At the Wawona Clubhouse off Wawona Street and 20th Avenue, the source of domestic water is apparently taken off from same line that feeds the surrounding irrigation system. It is a more recent addition in the Park's history, thus it is in good condition, but constitutes a health hazard due to lack of cross connection protection between the irrigation and domestic water outlets.

Recommendations

It is recommended that the existing Stern Grove domestic water system from the water meter connection point on Wawona Street to the Stern Grove valley, including the valley's distribution system, be replaced. The new domestic water main line would be a 6-inch line due to the

heavy demands and the importance it plays in serving the public.

Isolation gate valves would be placed at strategic locations on the main line to isolate portions of the line in the event service is required.

The existing domestic water supply to the Wawona Clubhouse will require a backflow preventer to be installed to eliminate the cross connection between the domestic water and the irrigation system.

It is also recommended that domestic water hose bibbs with automatic shut-off valves be installed adjacent to each of the picnic areas for the public's use for washing of tables and general picnic uses.

Please refer to the attached drawing, Diagram 7.1-A, for the layout of the proposed domestic water system for Stern Grove. The drawing includes the locations of major valves, service connections, fire hydrants, hose bibbs and connection points to the irrigation lines.

Service connections would be brought to the following buildings:

Trocadero Clubhouse

Stage and Performance Building

Stern Grove Restrooms
Sloat Boulevard Restrooms

Maintenance and Corporation Yard

Stern Grove Sewage Lift Station

Garage and Maintenance Storage (Wawona area)

Additional fire hydrants
There is one standard San Francisco Fire Department (SFFD) low-pressure fire hydrant located at the Stern Grove Parking Lot, which is supplied off the existing 6-inch diameter domestic water line that extends down from Wawona Street and 21st Avenue.

Fig. 7.1.2 - Existing Fire Hydrant

Recommendations
It is recommended that additional fire hydrants be located in Stern Grove valley. Specifically, hydrants should be located adjacent to both the east and west ends of the Stage/Performance Platform/Storage Shed; hydrants at each end of the Pine Lake Parking Lot; one midway through the Pine Lake Meadows; and one at the west end of Laguna Puerca.

Drinking fountains
There are only three drinking fountains in the Stern Grove valley. All three are of the single bowl design and they do not comply with the Americans with Disabilities Act (ADA) requirements.

Recommendations
It is recommended that accessible drinking fountains be placed at all entrances to the park, the playground/tennis court area off Sloat Boulevard, major public gathering places and at the entrances to the Concert Meadow.

It is recommended that accessible drinking fountains be placed at the following locations:

Entrance at 19th Avenue/Sloat Boulevard

Entrance at Wawona Street/22nd Avenue

Concert Meadow (Six (6) units)

Garage and Maintenance Storage

Stern Grove Restrooms

Sloat Boulevard Restrooms

Stern Grove Parking Lot

West Meadow
East Meadow

Dog Walking Meadow

The drinking fountains should be of the three-bowl style due to the large number of dog walkers/owners and disabled individuals requiring the assistance of service animals.

Pine Lake Park: Domestic Water Piping
The existing 3-inch diameter main from the water meters at Crestlake Drive and El Mirasol Place is inadequate to supply the water needs for the existing Pine Lake Field House, the connecting irrigation systems for the lawn areas and the irrigation for the hillside adjacent to Wawona Street. The existing line dates back to the late 1930's and are in poor condition.

Recommendations
It is recommended that a new bank of SFWD water meters be installed to supply a 4-inch domestic water line leading to the Pine Lake Park valley. This line would tie into the domestic water line from Stern Grove to form a loop through the two parks. Isolation gate valves would be placed at strategic locations to isolate portions of the line in the event service is required.

Domestic water service for the Field House at Pine Lake should be either supplied from the Stern Grove valley domestic water system or from a new service from the surrounding residential area. A domestic water line would extend down the north side of the Pine Lake Meadows towards Laguna Puerca to supply drinking water fountains and fire hydrants.

It is also recommended that domestic water hose bibbs with automatic shut-off valves be installed for public use adjacent to each of the picnic areas. They are required for general use during picnics and local sports.

Fig. 7.1.3 - Hose bibbs for washing and cooking are recommended at picnic areas

Please refer to the attached drawing, Diagram 7.1-A, for the layout of the proposed domestic water system for Pine Lake Park.

The drawing includes the locations of major valves, service connections, fire hydrants, hose bibbs and connection points to the irrigation lines.

Service connections would be brought to the following buildings:

- Field House at Pine Lake Park

Fire hydrants
There are no fire hydrants in the Pine Lake Park valley.

Recommendations
It is recommended that fire hydrants be located in the park. At a minimum, one fire hydrant should be located adjacent to the Pine Lake Parking Lot, one at the Maintenance Corporation Yard and two around Laguna Puerca.

Drinking fountains
There are no fountains in Pine Lake Park available to the public on a regular basis. The one fountain is located in a restroom that is normally closed to the general public.

Fig. 7.1.4 - Typical existing drinking fountain

Fig. 7.1.5 - Recommended three bowl drinking fountain

Recommendations
It is recommended that accessible drinking fountains be placed at the following locations:

Entrance at Wawona Street/Crestlake Drive

Entrance at Vale Street/Crestlake Drive

Pine Lake Meadow – On-leash Meadow

Pine Lake Meadow – Off-leash Meadow

Pine Lake Parking Lot

Field House

Maintenance Corporation Yard

Drinking fountains should be of the three-bowl style due to the large number of dog walkers/owners and disabled individuals who require the assistance of service animals.

Well Water Systems

General
At present, there is no actual well water system for either Stern Grove or Pine Lake Park. All the irrigation systems for Stern Grove, Pine Lake Park and the surrounding areas are fed off the San Francisco Water Department domestic water system.

Fig. 7.1.6 - Currently domestic water is used for both parks' irrigation demands

The existing Old Well House has had the well pump removed and the pump cavity closed.

Stern Grove and Pine Lake Park

Recommendations
We have two recommendations for the use of Well Water in Stern Grove and Pine Lake Park. Our first recommendation addresses the use of well water for maintaining the water level at Laguna Puerca and the Fish Pond via pumping either directly into them or into a streambed leading to the bodies of water and the second recommendation

addresses the use of well water for general irrigation uses throughout both parks and the surrounding lawn and planted areas.

Lake Fill Use

Use the existing well pump in the New Well House to lift groundwater to the surface and route it both to Laguna Puerca and the Fish Pond to eliminate the use of domestic water, especially with the SFWD's upcoming use of Chloramine. Please refer to the attached drawing, Diagram 7.1-B, for the proposed piping layout.

Fig. 7.1.7 - Recommending the use of Well Water for maintaining water level of Laguna Puerca

The piping for Laguna Puerca would be routed through new piping under the existing Pine Lake Parking Lot and through the East Meadow, discharging into either a streambed leading down to Laguna Puerca or to a grotto located east of Laguna Puerca at the lake edge.

For the Fish Pond, groundwater could be piped from the New Well House to the pond in order not to use domestic water at this location.

Park Irrigation Uses

We are recommending that groundwater be pumped from the underground aquifer to replace the current use of domestic water for irrigation purposes. Separate lines would feed the lake fill in the event it is decided that ground water is not to be used for the parks' irrigation supply. It is recommended that either the New Well House be recommissioned with a larger pump capable of delivering water to the surrounding hills at an adequate pressure (minimum of 100 psi) or a new deepwell be drilled in the vicinity of the previous two wells at the Pine Lake Parking Lot.

Fig. 7.1.8 - Existing New Well House

A new deepwell pump station would require a pump house structure, a vertical turbine deepwell pump and related mechanical and electrical equipment. This well water source would be fed directly into the irrigation system tying the two parks together. Connections to the SFWD domestic water system would be in place to supply the system in the event that ground water is not available due to either physical or political reasons. A backflow preventer would be installed at any connections between the well water and the SFWD domestic water sources.

Use of this aquifer water, if suitable for the parks' irrigation purposes, would lessen both the use of valuable domestic water for irrigation and costs for treating ground water at the City's Oceanside Treatment Plant.

A study should also be taken to consider the ground water that collects east of 19th Avenue for use a source of irrigation water. This ground water reportedly collects under the Scottish Rite Temple and the condominium complex. Prior to the building of a "berm" for 19th Avenue, the area east of the 19th Avenue "berm" was part of the surrounding valley and natural drainage area that lead down to Laguna Puerca and kept the lake filled. From discussions with numerous individuals, the ground water that collects in this area is reportedly being pumped into the domestic

sewage system instead of being used to replace domestic water for irrigation uses.

Old Well House
It is recommended that the Old Well House be officially decommissioned with the wooden building being demolished and the pump cavity filled in with concrete and sand.

Fig. 7.1.9 - Existing well house recommended to be decommissioned and demolished

Mechanical Irrigation System

General
The majority of lawn areas in both Stern Grove and Pine Lake Parks lack automatic irrigation systems.

The exception is at the Croquet Greens off 19th Avenue, where the croquet greens are automatically feed (Area M on Diagram 7.1-D).

The borders for the Croquet Greens lack automatic sprinklers and are manually watered by the gardeners.

Presently, the lawn areas that require irrigation water are fed off of portable sprinklers supplied by hoses from the few quick couplers that exist in each lawn area.

Fig. 7.1.10 - Typical use of portable sprinkler and hose to irrigate meadows and planted areas

Recommendations
Therefore, it is recommended that both Stern Grove, Pine Lake Park and the surrounding areas, including the Wawona Clubhouse, Children's Playground and the entrance areas, be furnished with automatic irrigation systems which are controlled by both local controls and a central control point.

Automatic irrigation systems consisting of sprinkler laterals would be installed at each of the lawn and planting areas that requires watering on a regular basis.

Irrigation controllers would be located in key areas shown on the attached drawing, Diagram 7.1-D, and would operate a number of irrigation remote control valves in their immediate area. These controllers would then communicate with a central station via either hard wire or modem.

Fig. 7.1.11 - Recommended irrigation controller and pedestal

The central control station would allow the gardener supervisor to make adjustments to the watering times both at a central station

computer or in the field with a hand held remote controller when in the proximity of a local irrigation controller.

Between the irrigation main line and the remote control valves serving the sprinkler laterals, a valve vault containing a master remote control valve and flow sensor would be installed. This assembly would be called a Master Control Valve (MCV) and would shut down the particular area in the event there is a leak determined by the flow sensor when the laterals are not in operation.

Stern Grove

The existing piping for the irrigation supply leads down from the 20,000-gallon reservoir to the Stern Grove valley. This piping is over fifty years old and is in poor condition. With a break in the line, portions of the hillside could wash down into the valley below. Since the reservoir has no shut-off valve, a line break could quickly empty the 20,000-gallon reservoir, while being additionally fed by the domestic water source until it is turned off.

Recommendations

It is recommended that the irrigation water main line from the reservoir to the valley be replaced with a minimum 8-inch ductile iron main. A normally open control valve should be installed at the reservoir outlet in order to shut down the system in the event of a line break.
This main line should be connected to an identical main from Pine Lake Park.

Strategically located isolation gate valves would be located on the irrigation main line to isolated areas when service is required.

Please refer to Diagram No. 7.1-C for the proposed piping layout.

It is recommended that the existing concrete reservoir be retained and repaired if the groundwater is used for the irrigation system. This would allow a reserve source to be kept and to minimize the well pump from cycling on and off. An automatic pressure valve on the reservoir supply would allow an adequate pressure to be maintained in the irrigation lines adjacent to the surrounding adjacent residential areas. This would be required due to the greatly varying elevations throughout the two parks.

During the writing of this report, it was understood that that groundwater from the New Well House would not be used at this time for irrigation use and SFWD domestic water would be used instead. Thus, the repair of the concrete reservoir for use would depend on the political policies for using groundwater for irrigation, at the time of construction.

Repairing the existing concrete reservoir would require structural work, including replacing the entrance steel plate hatch cover, ladders and miscellaneous metalwork, and providing signage indicating that the reservoir is a confined space.

It is recommended that quick couplers be installed on the irrigation main lines and at picnic areas for wash down as determined by the gardeners. The installation of automatic irrigation systems is strongly recommended for the following Stern Grove lawn and planted areas:

Lawn areas

Concert Meadow (Area I)

Fig. 7.1.12 - Concert Meadow is manually watered, typical of the majority of the Stern Grove's meadows

West Meadow (Area H)

East Meadow (Area J)

Wawona Street, between 25th and 26th Avenues (Area F)

North side of Crestlake Drive (Area G)

Dog Walking Meadow - Wawona Street between 23rd and 24th Avenues (Area K)

Wawona Street between 19th and 20th Avenues (Area L)

Sloat Boulevard between 19th and 21st Avenues (Area N)

Wawona Street between 21st and 22nd Avenues (Area O)

Putting Green at Sloat Boulevard and 21st Avenue (Area Q)

Entrance at Sloat Boulevard and 19th Avenue - Sloat Boulevard and 19th Avenue (Area R)

19th Avenue, north of Sloat Boulevard (Area T)

(Please refer to Diagram 7.1-D for locations of the above lawn areas.)

Landscaped areas
Park Entrance at 19th Avenue and Wawona Street (Area P)

Hillside quick couplers

(Please refer to Diagram 7.1-D for locations of the above-planted areas.)

Pine Lake Park

Recommendations
It is recommended that a new dedicated 6-inch line be installed for the Pine Lake irrigation systems from the bank of water meters at Crestlake Drive and El Mirasol Place. The line would incorporate a backflow preventer directly downstream of the water meters to protect the upstream domestic water source. This main line should be connected to an identical main from Stern Grove. Strategically located isolation gate valves would be located on the irrigation main line when service is required to isolated areas.

It is recommended that quick couplers be installed on the irrigation main lines and at picnic areas and areas for wash down as determined by the gardeners. The installation of automatic irrigation systems are strongly recommended for the following Pine Lake Park lawn and planted areas:

Lawn areas
Entrance at Crestlake Drive and Wawona Street (Area A)

Pine Lake Meadow-west side (Area B)

Fig. 7.1.13 - East Meadow is manually watered, typical of Pine Lake Park's meadows

Pine Lake Meadow-east side (Area C)

Entrance at Crestlake Drive and Vale Street – west side (Area D)

Entrance at Crestlake Drive and Vale Street – east side (Area E)

(Please refer to Diagram 7.1-D for locations of the above lawn areas.)

Landscaped areas
ADA path at Crestlake Drive and Wawona Street entrance (Area S)

Hillside quick couplers

(Please refer to Diagram 7.1-D for locations of the above-planted areas.)

Conclusions

The domestic water systems for Stern Grove and Pine Lake Park are fed off the San Francisco Water Department's water mains from the surrounding residential areas and are currently used for both domestic uses and as a supply for the irrigation systems.

This dual use of the domestic water supply at the Wawona Club House and Pine Lake Park could contaminate both the domestic water supply for the buildings and the supply upstream of the water meters since there is no existing backflow protection.

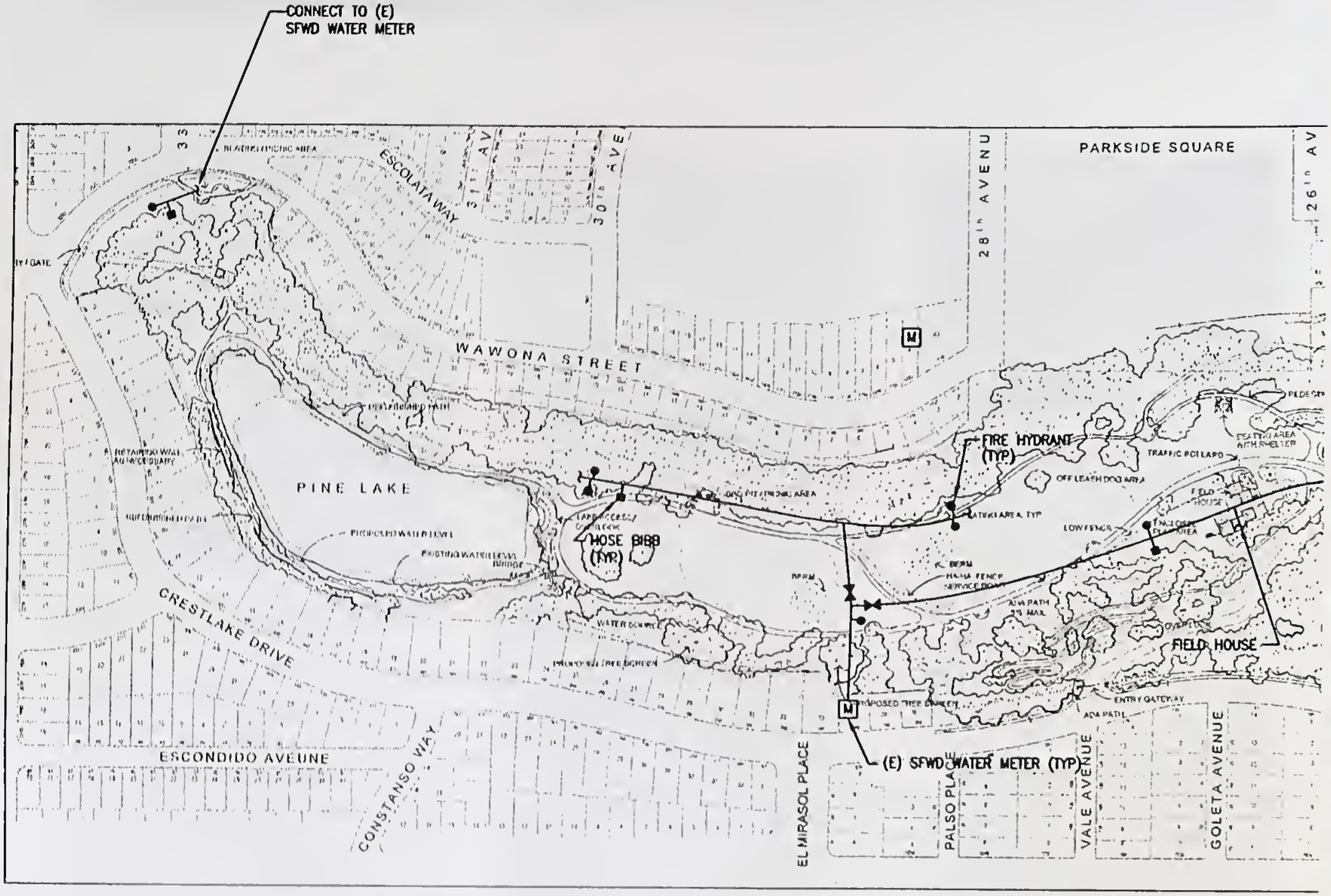
In addition, the majority of piping for the main meadows in both Stern Grove and Pine Lake Park were installed over a half a century ago and its condition is deteriorating, requiring increasing number of repairs as time goes by to keep the system in operation. It is highly recommended that all the existing piping mains for both the domestic water and irrigation water be replaced with a minimum of 4-inch ductile iron pipes for domestic water and 6-inch ductile iron pipes for irrigation.

There is an insufficient number of drinking water fountains in both parks. This is especially evident in Pine Lake Park where there are no drinking water fountains except in the Pine Lake Field House restrooms. It is recommended that drinking fountains of the three bowl style and hose bibbs be installed throughout the park, especially at the meadows and entrance areas.

The current use of domestic water for irrigation purposes should be reviewed, since wells drawing ground water from the valley's aquifer have been used successfully in the past at Stern Grove/Pine Lake Park. This would lessen, if not eliminate, the current practice of using valuable domestic water for the irrigation supply and prevent ground water that does collect east of the park from being disposed into the domestic sewage system.
In its present condition, the existing Stern Grove and Pine Lake Park irrigation systems are, at best, inadequate to meet the present and growing demands placed on them by park maintenance needs. The two park lawn areas, with the exception of the Croquet Greens, are irrigated manually by park gardeners. This requires that the gardeners spend most of their time dragging hoses and portable sprinklers from the few quick couplers to irrigate the meadows. The lawn is then easily over or under watered and the gardeners have to remain in the general proximity of the area being watered in order to tend to the portable sprinklers.

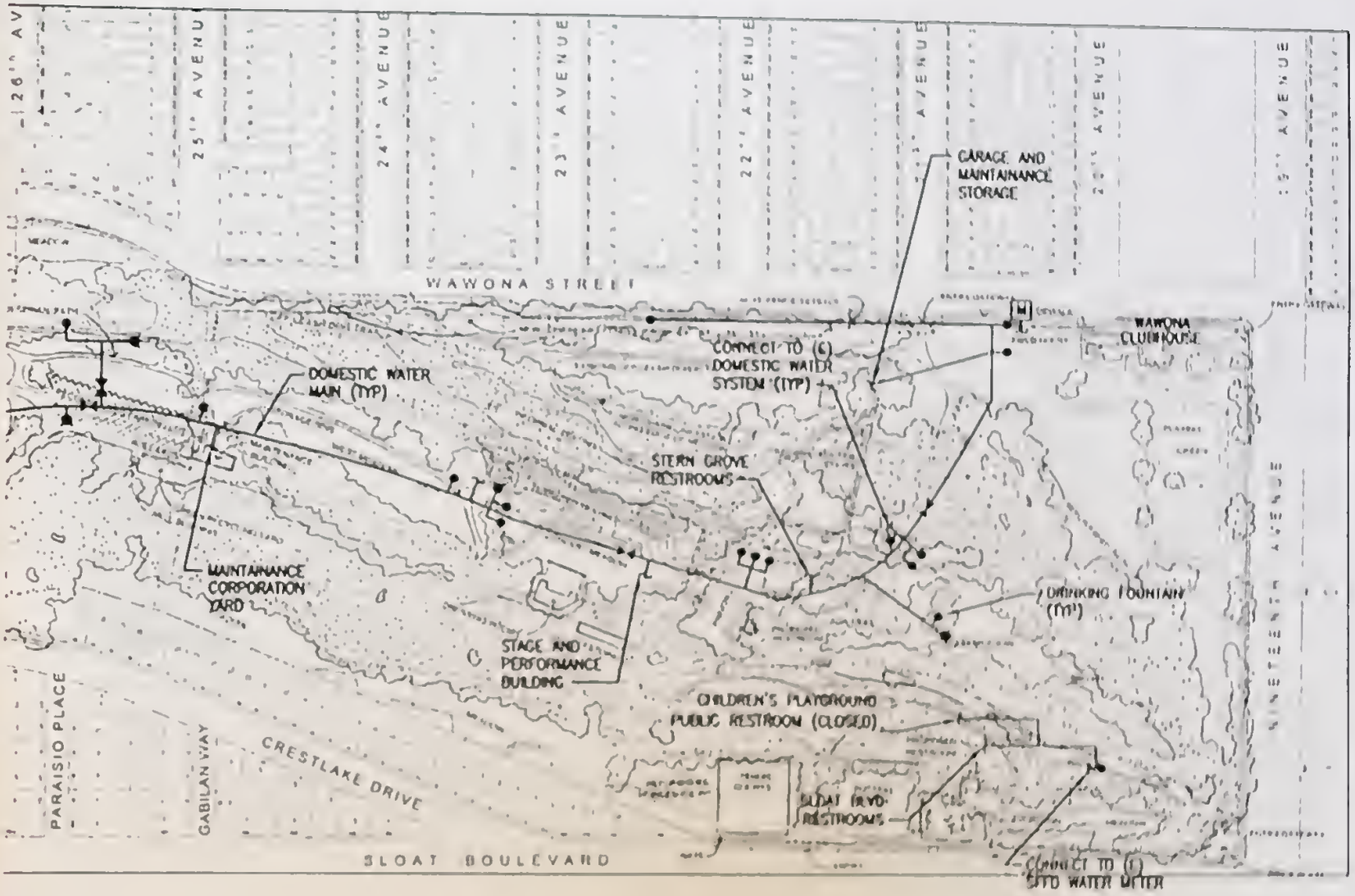
Watering during the day hours also closes down the lawn areas to the general public, the time when the use of the meadows is the greatest.

To reduce time spent on manually irrigating the meadows, it is strongly recommend that automatic irrigation systems be installed for the lawn and planted areas. These irrigation systems could be operated both from local controllers at the meadows and from a central control station at either the Trocadero Clubhouse or the Maintenance Corporation Yard.



General Recommendations

Replace all domestic water mains and service connections.



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SCALE: 1" = 250'-0"

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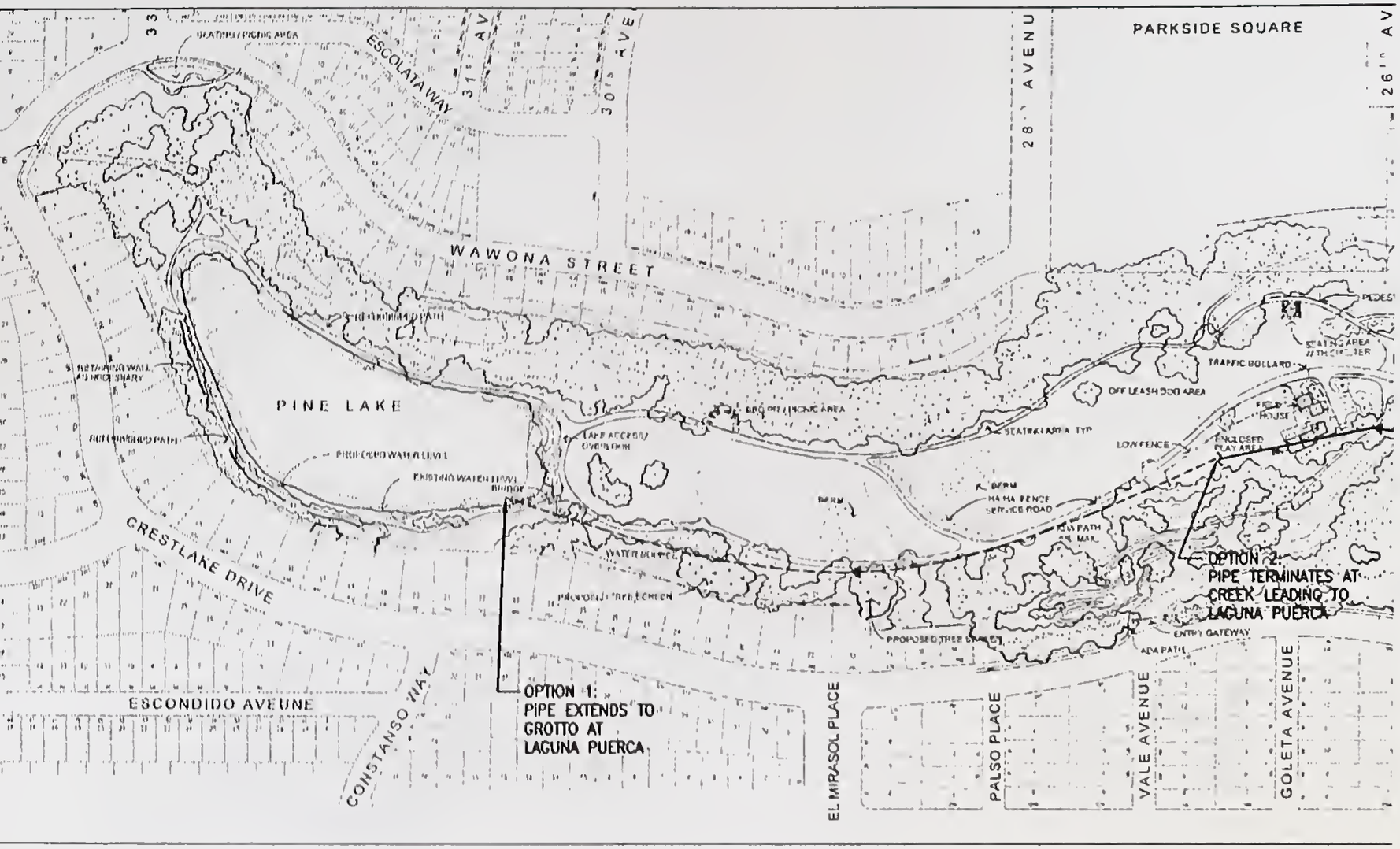
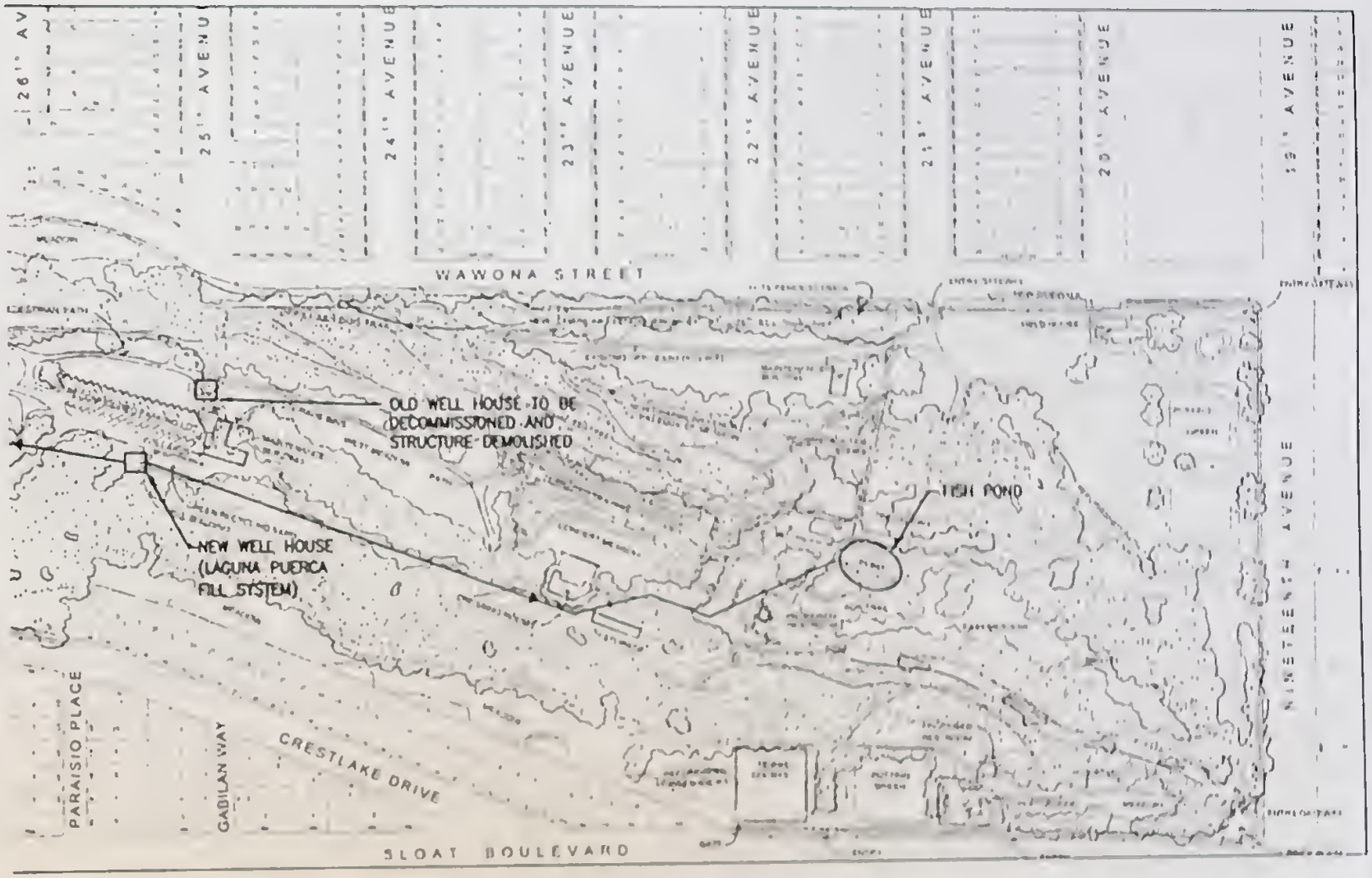
STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN
WATER SYSTEMS-DOMESTIC WATER
DIAGRAM NO. 7.1-A



General Recommendations

Use existing groundwater to maintain water levels at Laguna Puerca and Fish Pond.



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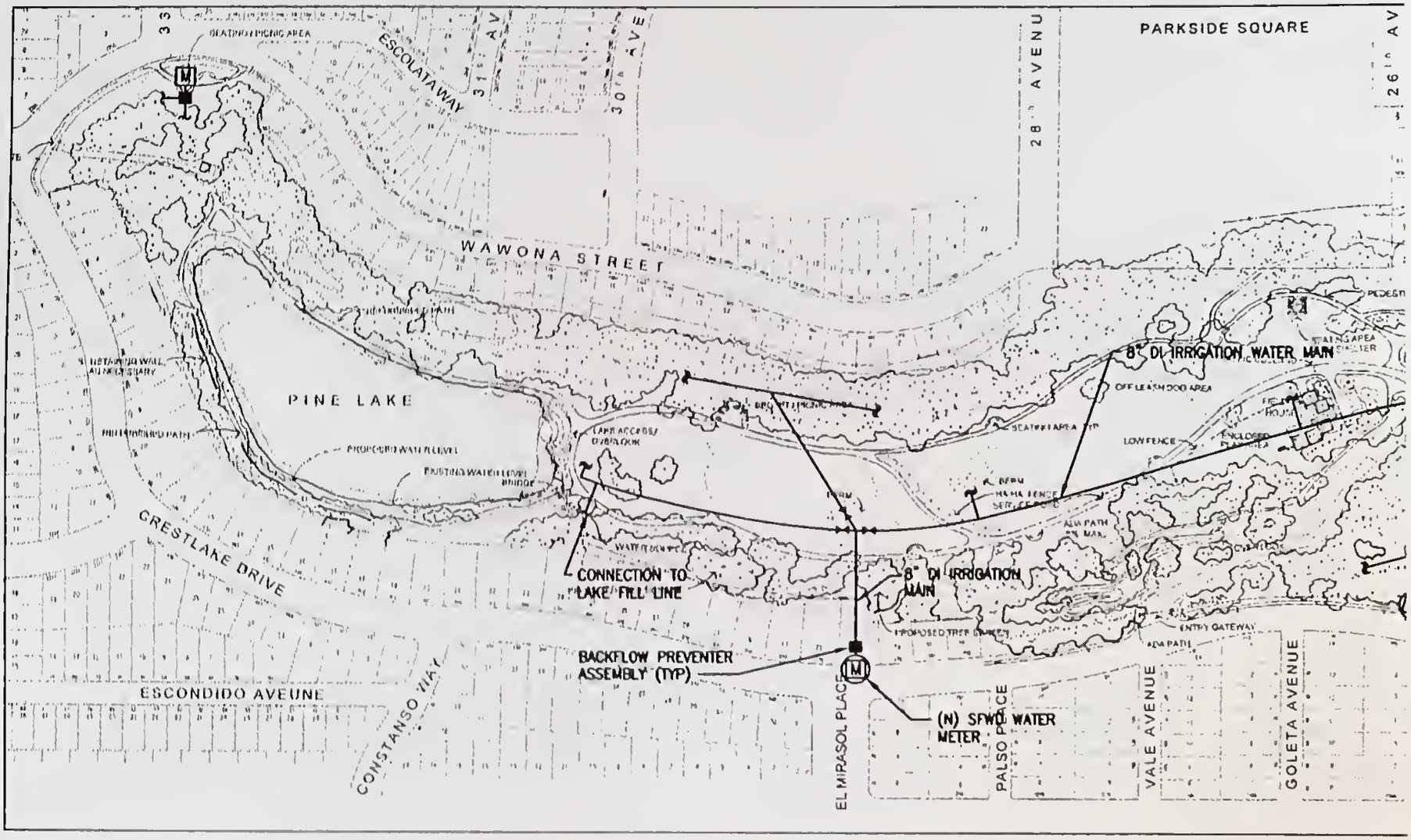
SCALE 1" = 250'-0"

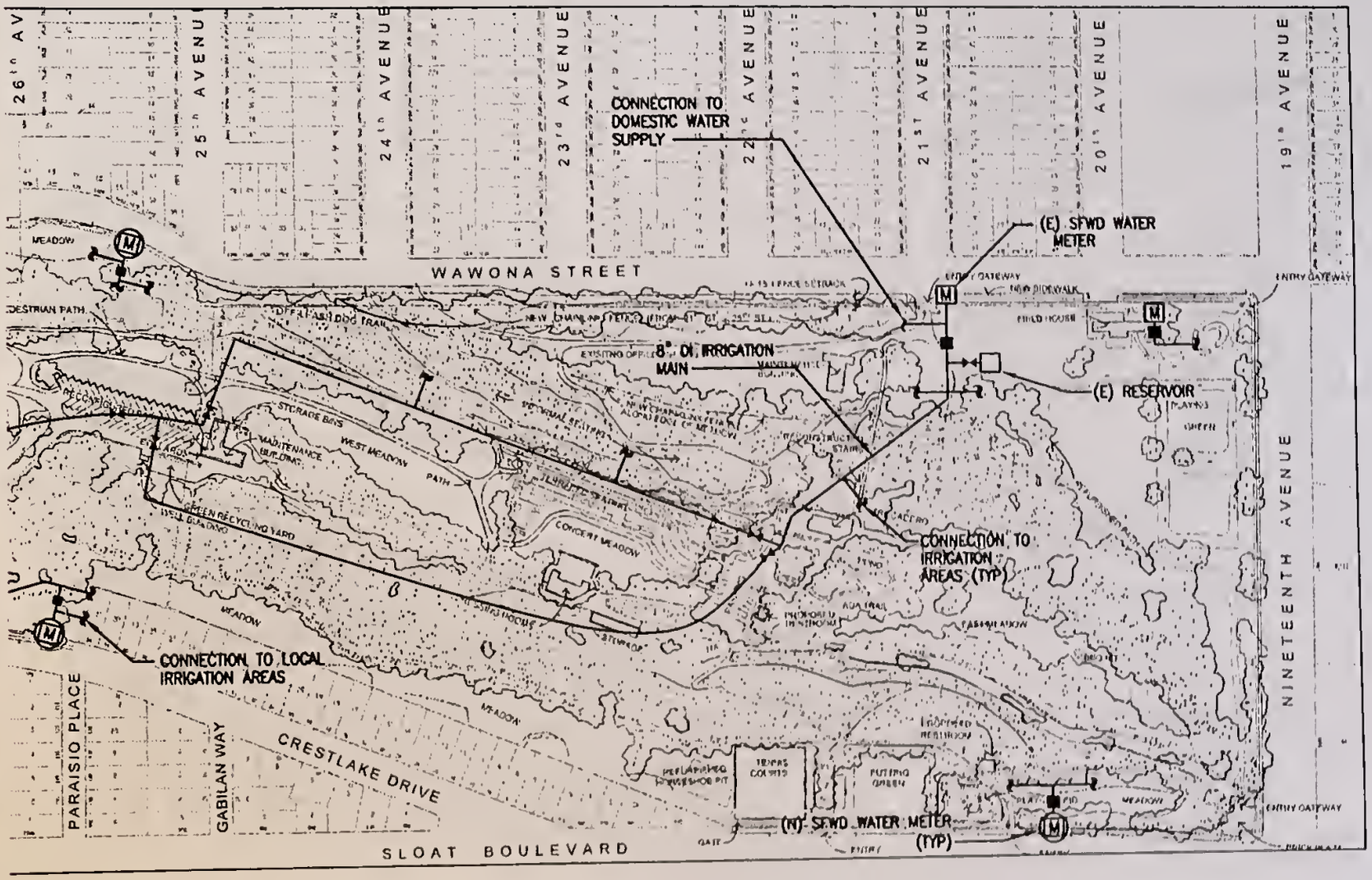
N

STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN
WATER SYSTEMS-WELL WATER
DIAGRAM NO. 7.1-B



General Recommendations

Provide new ductile iron mains and connecting piping to irrigation areas and lake fill connection points.



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SCALE: 1" = 250'-0"

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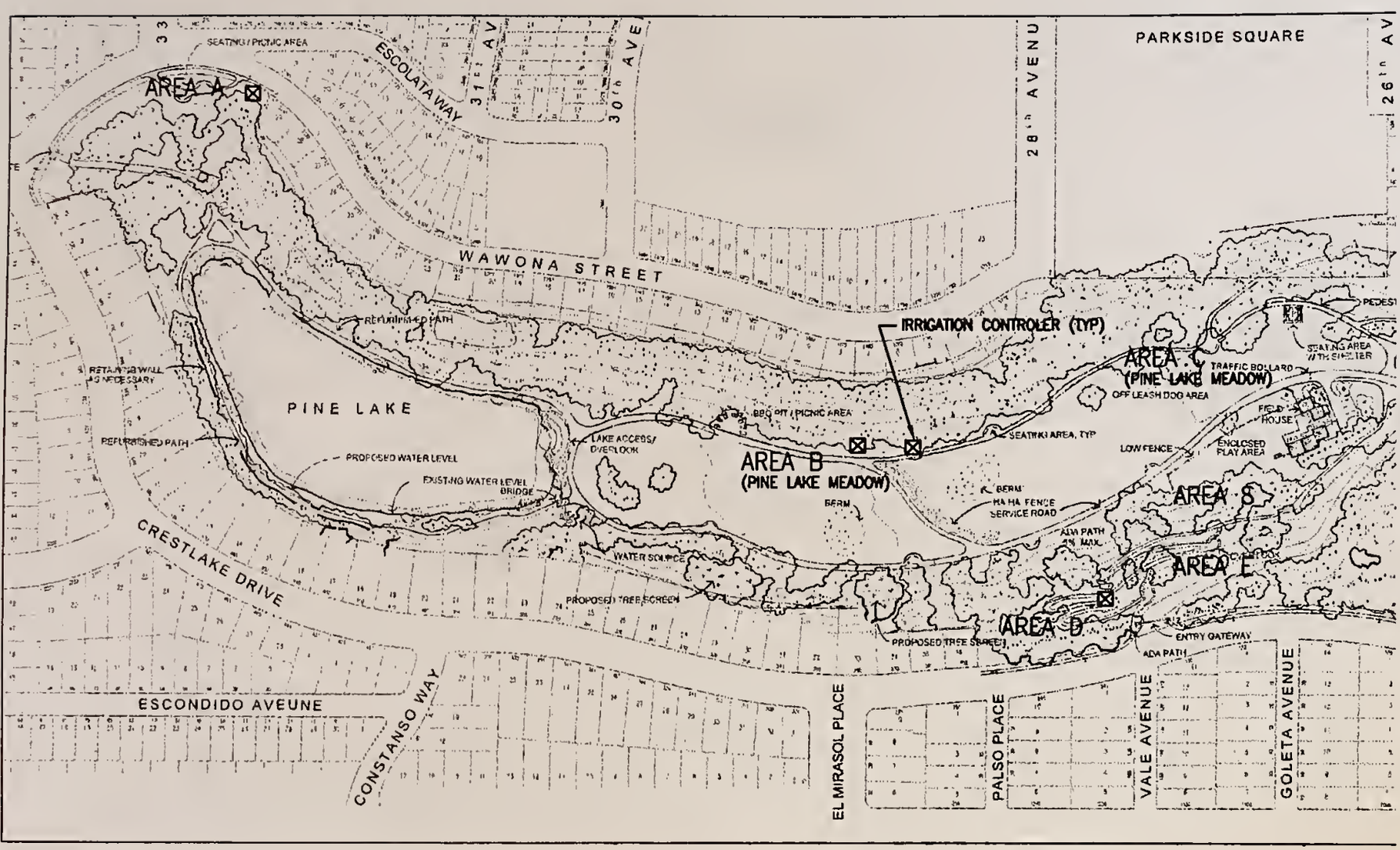
STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN
WATER SYSTEMS-IRRIGATION MAINS
DIAGRAM NO. 7.1-C



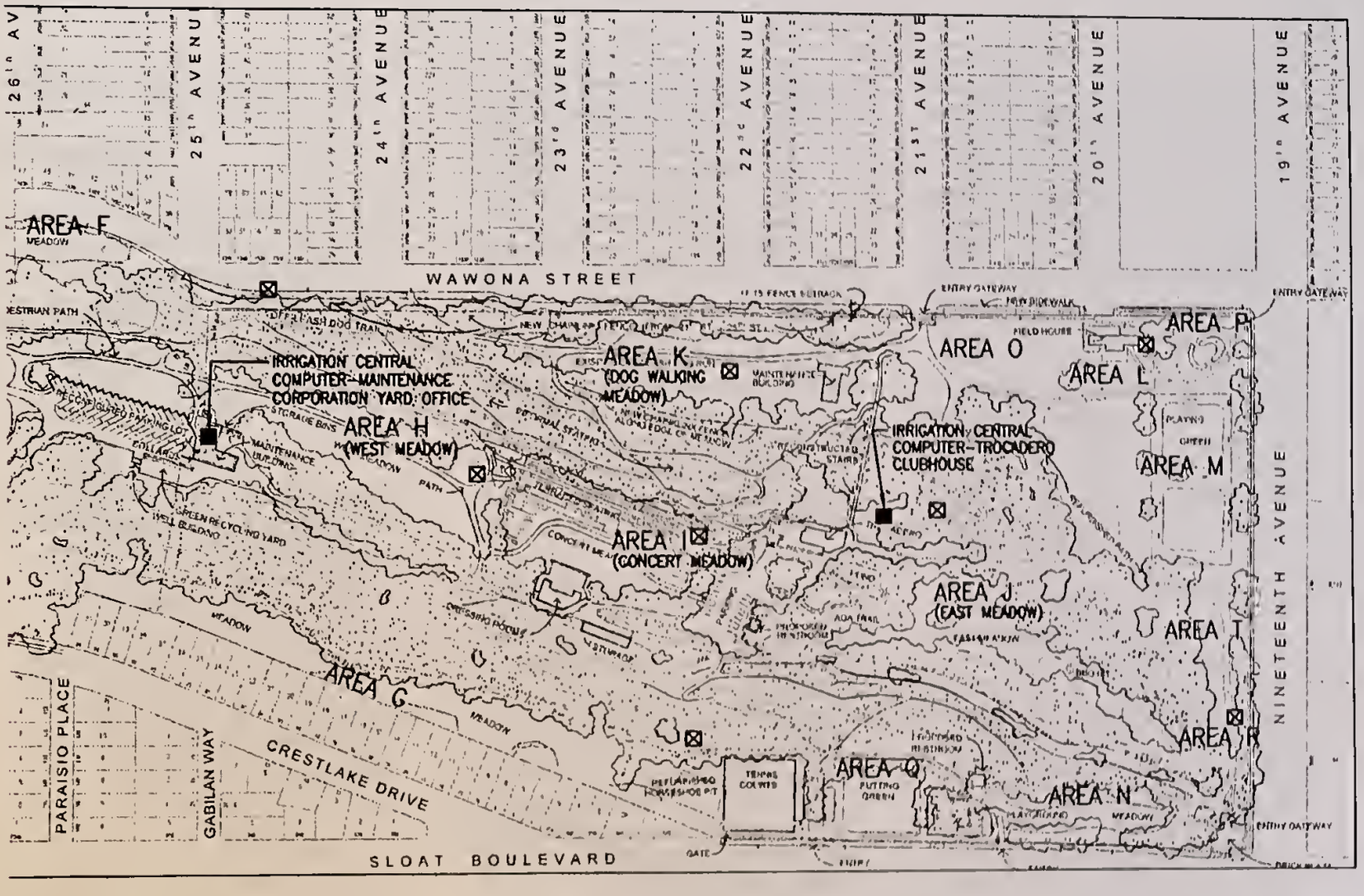
General Recommendations

Provide automatic irrigation for all meadows and established planting areas.

Provide irrigation control with central computer system and local irrigation controller at meadows and established planting areas, see report section for more details.

NOTE:

REFER TO DIAGRAM NO. 7.1–C FOR IRRIGATION WA



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SCALE: 1" = 250'-0"

N

WATER MAINS.

STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN
WATER SYSTEMS-IRRIGATION AREAS
DIAGRAM NO. 7.1-D

SEWER SYSTEM

Overview

The sewer systems in Stern Grove and Pine Lake Park play a vital part in the operation of the two Parks. The sewer systems collect the sanitary and storm flow generated within the Park and discharges it to the existing sewer systems in the surrounding community.

The existing sewer system located in Stern Grove and Pine Lake Park consists of side sewer laterals, storm water inlets, main gravity flow sewer lines, lift stations and force mains. The sanitary flows are collected from the buildings and are connected to a gravity sewer line. They are channeled to one of two lift stations located within the park area and pumped through a force main to the sewer system in the surrounding community. The storm flows collected are channeled to either a lift station or a pond or allowed to drain naturally within the park area.

There are several facilities within the park that generate sanitary flow including Clubhouses, restrooms, dressing rooms and a field house. There are also 35 homes along the Crestlake Drive, at the Southwest end of the park, that generate sanitary and storm flows and drain into the Pine Lake Park. In addition to the sanitary flows generated, there are facilities that collect storm flow. Some of the storm flows generated within the park are collected into sewer lines and transported by gravity to lift stations. The other storm flows are collected and drained into the Fish Pond adjacent to the Trocadero Clubhouse or drained naturally into the ground. There is an existing naturalistic open channel between the Fish Pond and sewage pump shed that collects and transports the Fish Pond overflow and surface runoff.

Pine Lake Park

There are 35 homes along the north side of Crestlake Drive that discharge storm and sanitary flows into a 10-inch diameter ductile iron pipe (DIP) sewer buried along the steep wooded slopes of Pine Lake Park. A portion of the pipe is exposed, supported by concrete pedestals and visible to park goers. The 10-inch sewer routes around the south and west sides of the lake and drains into the Pine Lake Pump Station. There are elevated concrete manholes located along the pathway marking the sewer route and location. The side sewer laterals from the 35 homes are buried in the heavily wooded slope and connected to the 10-inch sewer. The side sewer laterals from four of the homes are partly exposed and appear to be in poor condition. The exposed portions are visible from the pathway traveling along Pine Lake. The homeowners suffer recurring maintenance problems due to root intrusion clogging up the system. The Bureau of Street and Sewer Repair (BSSR) faces difficulties in accessing and maintaining the sewer due to the steep slopes, trees, undergrowth and PG&E and Pacific Bell poles and wires. The sewer and side sewer laterals were originally constructed in 1926 and modified in 1980. The sewer and side sewer laterals were replaced with the current 10-inch diameter DIP and 4-inch DIP side sewer laterals in 1982.

Stern Grove

The sanitary and storm flows generated in Stern Grove are collected in an 8-inch diameter vitrified clay pipe (VCP) sewer. The men's restroom and dressing building were constructed in 1948 and connected to the existing 8-inch diameter sewer by 4-inch diameter side sewer laterals. A portion of the 4-inch side sewer lateral from the men's restroom was exposed and appeared to be in fair condition. The clean-outs and side sewer laterals at the Trocadero Clubhouse, restrooms and dressing building could not be found during the field investigation. The sewer serving the Children's Playground Public Restroom could not be located. It was reported that the restroom and storm water inlets in the area drain into the sewer on Sloat

Boulevard. The existing plans do not show the discharge point of the line. The former Wawona Clubhouse was extensively remodeled within the last couple of years and met all the City codes at the time of remodeling. The sanitary waste piping should be in good condition and flows by gravity to the sewer on Wawona Street.

There are several storm water inlets throughout the east side of the Park that collect storm water flow. There are nine storm water inlets located at the Children's Playground area. A total of six inlets were completely filled with dirt and one could not be found. The age, condition and flow direction of the inlets and drain lines are unknown at this time. In addition, the discharge points of the inlets are unknown at this time. There are two storm water inlets located just off the pathway near the Wawona Clubhouse. These storm water inlets were constructed around 1955 and are filled with dirt. The existing plans indicate that a drainage ditch connects the inlets and then tie into a 6-inch diameter corrugated metal pipe that drains into the Fish Pond at the Trocadero Clubhouse. The route, location and condition of the line are unknown at this time.

There are several facilities in Stern Grove that are to be demolished and removed. Some of these facilities have sewer connections that will need to be disconnected and plugged. There are several facilities to be constructed that will need sewer connections.

Sewer System Improvement Recommendations

Pine Lake Park

A. Perform a television inspection and evaluation on existing 10-inch diameter DIP serving Crestlake Drive residents. Make recommendations based on evaluation. May require installation of new 10-inch diameter DIP, manholes and 6-inch side sewer laterals.

B. Reconstruct 4 exposed 6-inch diameter DIP side sewer laterals and bury them deeper into the hillside.

C. Work with City Landscape Architects and erosion control consultants to develop alternative to conceal the exposed portion of 10-inch diameter DIP.

D. Develop alternatives to restore drainage connection between Reflecting Pond and Pine Lake.

E. Develop surface drainage systems in Pine Lake Park based on Erosion Control Plan including catch basins, 12-inch diameter VCP, cleanouts, access boxes and French drains based on surface drainage analysis and recommendations.

Stern Grove

A. Perform a television inspection and evaluation of existing 8-inch diameter sewer serving existing facilities in Stern Grove. Make recommendations based on evaluation. May require installation of new 12-inch diameter VCP, manholes and 6-inch diameter VCP side sewer laterals.

B. Restore the brick manhole located at the stage with coat of spray mortar.

C. Install a new manhole at the end of the existing 8-inch diameter main sewer alignment to identify the sewer location and allow for easier maintenance and inspection.

D. Clean the existing storm water inlets and culverts located in Stern Grove. Replace inoperable inlets and culverts with new storm water inlets and culverts.

E. Develop surface drainage systems in Stern Grove based on Erosion Control Plan including catch basins, 12-inch diameter VCP, cleanouts, access boxes and French drains based on surface drainage analysis and recommendations.

F. Install new 6-inch diameter VCP side sewer laterals and possible 12-inch diameter VCP sewer mains and manholes for proposed Stern Grove Restrooms, Stage and Performance Building, Pine Lake Park Field House, Maintenance Corporation Yard Facility, Garage and Maintenance Storage and Sloat Avenue Restrooms.

G. Abandon, remove and/or fill existing sewers and side sewer connections to Pine Lake Field House, Dressing Rooms, Restroom Facilities, Men's and Women's Underground Restrooms and Children's Playground Restroom. The service to the Children's Playground Restroom may remain in-place if the building is used for Maintenance Storage.

Conclusion

The existing sewer system located in Stern Grove and Pine Lake Park consists of side sewer laterals, storm water inlets, main gravity flow sewer lines, lift stations and force mains. The storm systems consist of storm water inlets, piping and natural open channels. The storm flows collected are channeled to either a lift station, Fish Pond or allowed to drain naturally within the park area.

The existing sanitary and storm collection systems have been identified and evaluated based on field investigations and existing documentation. Some additional investigation and evaluation will be required in order to determine the internal condition of the existing sewer mains. Based on the investigations, documentation and proposed new service changes, a list of recommendations has been developed to aid in the improvement of Stern Grove and Pine Lake Park. Once the internal sewer conditions have been evaluated, additional recommendations should be developed based on the findings of investigations.

SEWER SYSTEM FORCE MAIN SYSTEMS

Overview

Both Stern Grove and Pine Lake Park are situated in a valley well below the surrounding domestic gravity sewer systems. Because of this, all domestic sewage and wastewater produced in Stern Grove and Pine Lake Park must be pumped to the existing sewer systems in the surrounding residential areas for eventual treatment.

The existing Sewage Pumps Shed located east of the Pine Lake Parking Lot is both structurally and functionally in poor condition and requires an increasing amount of repairs to keep it in operation. At present, only two of the three sewage pumps work and the discharge piping manifold is likely to fail at any time due to the poor condition of both the piping and the concrete support blocks.

It should be noted that a failure of the Sewage Pumps Shed would create a major disaster to the area due to the overflowing of raw sewage onto the Pine Lake Parking Lot, closing down that area of Pine Lake Park, and closing down all the sanitary facilities throughout Stern Grove.

The existing sewage ejector in the Pine Lake Field House will no longer be needed if the building is to be demolished and will be removed at that time.

Stern Grove

Demolition of the existing Sewage Pumps Shed

The existing Sewage Pumps Shed lift station is approximately 60 years old and both the structure and its mechanical and electrical equipment are in poor condition. There are three (3) submersible sewage lift pumps at the station. Pump No. 2 is not running due to electrical problems and worn out bearings. Pumps No. 1 and 3 are operating, but their condition requires spending an ever-increasing amount of money and time to maintain them past their useful lives.

Fig. 7.3.1 - Existing sewage pump station recommended to be demolished and replaced

The discharge pipes that form the discharge manifold are rusting from both their interior and exterior surfaces.

The concrete pipe supports are deteriorating, causing the weight of the pipes and liquid to be supported on the volutes of the pumps. This strains the pumps; increases the chances of the pumps to fail due to misalignment of the pump columns and the interior pump shaft and bearings.

Any maintenance work to repair either the piping manifold or pumps requires the stationary engineers and plumbers to enter a confined space with the usual hazards that it presents. Repairing is also regarded as a temporary measure at best since the existing condition of the piping and pump below the floor level is in such poor condition.

New Stern Grove Sewage Lift Station

Recommendations

Therefore, based on the condition of not only the above mentioned mechanical and electrical equipment, but also the deteriorating conditions of the structure itself, it is recommend that a new lift station be constructed and the existing lift station be demolished.

The Stern Grove Sewage Lift Station should include three (3) Flygt type submersible sewage pumps mounted on railings that extend to the ground surface. This type of pump with a detachable body allows the pump to be brought up to grade level, removed from the railings and either repaired at the site or brought to the maintenance area.

The discharge piping manifold would preferably be above ground to eliminate the stationary engineers and plumbers from entering a confined space filled with sewage to perform any work. The pumps should be equipped with Variable Frequency Drive (VFD) capability to handle varying flow of sewage and to reduce electrical demand during start-up and shut down. Two (2) pumps should adequately handle the heaviest flows with the third pump as a standby.

The domestic sewage from the Field House and Maintenance Corporation Yard buildings will also be routed to the sewage lift station.

It is also recommended that domestic water be brought to the sewage lift station for wash down purposes, sanitary use and for an emergency eye wash/shower station.

Existing Force Main to Wawona Street

The existing sewage force main from the Pine Lake Parking Area to Wawona Street is in good condition and will not need to be replaced.
Please refer to Diagram 7.3-A for the location of the Stern Grove Sewage Lift Station.

Existing Incoming Sewer Lines

Please refer to hydraulic section of this report regarding the existing condition of the incoming sewer lines.

Pine Lake Park

Demolition of the Existing Pine Lake Field House Sewage System

Recommendations

The existing sewage ejector sump shall be removed during demolition of the field house structure. The building's sewage force main pipe from the sewage ejector to the connection point with the domestic sewage gravity system on the hillside shall be removed. The connection point into the manhole should be plugged to prevent sewage from spilling down the hillside in the event of a back up in the system.

Field House Sewage System

Recommendations

Provide a sewage ejector system, including dual pumps, piping, gate and check valves, sewage sump and controls package, for the Field House.

Provide a force main from the Field House to the Stern Grove Sewage Lift Station.

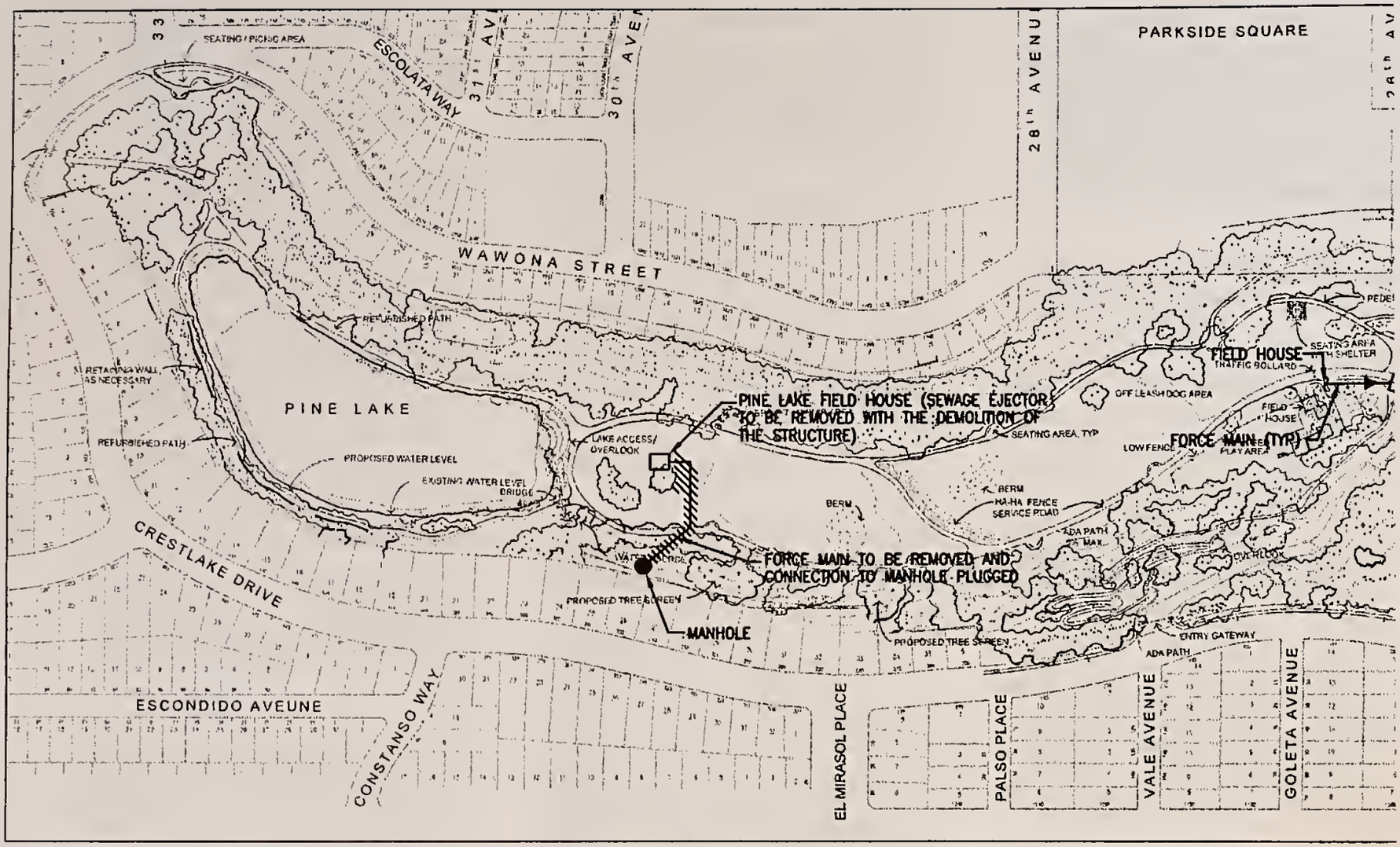
The installation of the sewage ejector and force main is based on site topography and location of the Field House. The proposed current Master Drawing, the location of the new Field House is lower than the inlet to the proposed Stern Grove Sewage Lift Station, thus requiring a sewage ejector to lift the sewage.

Please refer to Diagram 7.3-A for the location of the Field House, Maintenance Corporation Yard and the connecting sewage piping leading to the Stern Grove Sewage Lift Station.

Conclusions

Due to the heavy use of both Stern Grove and Pine Lake Park, a reliable means of disposing of domestic sewage must be available for the public and Recreation and Park Department personnel at all times. With the existing Sewage Pumps Shed in its present condition, there is little

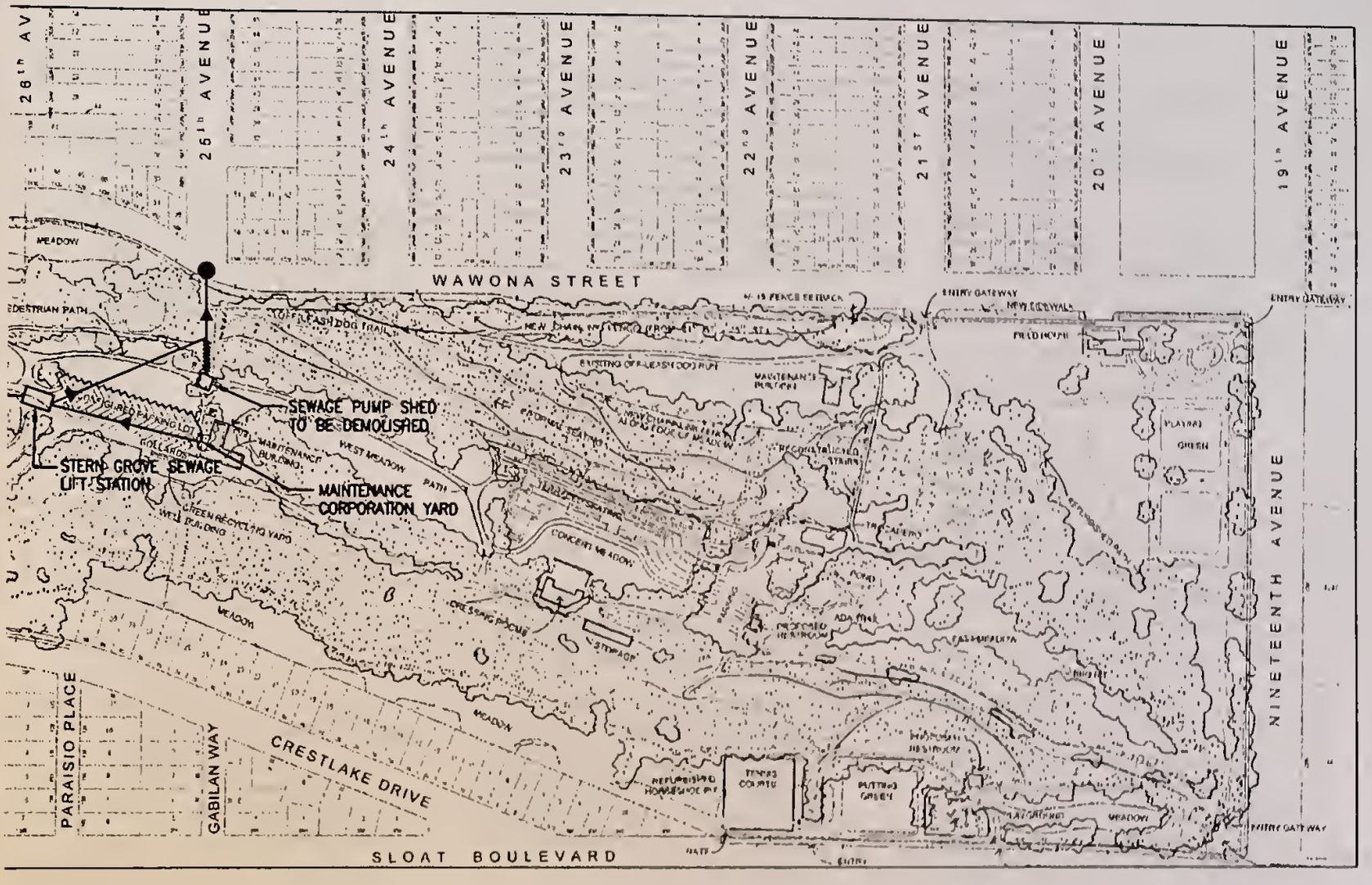
assurance that this will be possible in the foreseeable future. It is strongly recommended that the new Stern Grove Sewage Lift Station be built and placed into operation as soon as possible.



General Recommendations

Demolish the existing Sewage Pump Shed.

Construct new lift Satation to support new and existing building throughout the two parks.



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SCALE: 1" = 250'-0"

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STERN GROVE AND PINE LAKE PARK
IMPROVEMENT PLAN
SEWAGE FORCE MAIN AND PUMPING SYSTEMS
DIAGRAM NO. 7.3-A

ELECTRICAL SYSTEM

Overview

This section provides a summarized assessment of utilities such as site lighting or of areas with electrical service that are not described as part of section 6.2 Building Electrical Systems, and provides recommendations for improvements. (For a more detailed assessment refer to the Site Assessment Report).

Each item in this section of the report is discussed separately first in the Description section and then in the Recommendations section.

Description

Stage Area

Electric service to this area is new (2001). Feeders from the Recreation and Park Department owned 600A switchboard located on the northeast end of the Pine Lake Park parking lot, feed the switchboard at the stage area via an adjacent step-down transformer. This equipment serves all the lighting and sound equipment required at stage area during concerts.

Site Lighting

Minimal site lighting is provided in the park. Most of the lighting fixtures are either HPS, cobra head style pole mounted fixtures or HPS, shoebox style pole mounted fixtures. The shoebox style light fixtures are in poor condition. Also, the level of lighting they provide is too low and their light distribution is not good. Some lights are covered by the trees. Most of the lights are powered from Trocadero except as noted below.

The areas with cobra head and shoe-box style lighting include the road from the entrance at Sloat Boulevard and 19th Avenue to the parking lot, the parking lot, the area around Trocadero, the concert meadow, the stage area, and the dressing rooms area.

Shoebox style lighting can be found by the Children's Playground and adjacent restrooms.

Site lighting at Wawona Clubhouse consists of two cobra head style pole mounted fixtures. These lights are fed from the Wawona Clubhouse. These Fixtures are in fair condition.

Some park areas are without lighting. Pine Lake Park has no lighting in its parking lot. Other areas without lighting are the Tennis Courts, Horseshoe Pits, Putting Green, Croquet Greens, and the Park's entrance at Sloat Boulevard and 19th Ave.

Electrical System Improvement Recommendations

Stage Area

The new Stage and Performance Building will provide all the required power for lighting and sound equipment. (See Stage and Performance Building in Section 6.2 - Building Electrical Systems)

Site Lighting

Provide lighting at reconfigured Pine Lake Park Parking Lot. Source of electrical service shall be from the 600A switchboard at Pine Lake Parking Lot. Install new conduit and wiring for electrical service. Provide aesthetically pleasing, energy efficient fixtures that meet IES standard illumination levels.

Remove existing shoebox style lighting fixtures. Disconnect existing feeders to lighting from Trocadero, and remove exposed conduit with wiring. Underground conduit and wiring shall be abandoned in place. Demolition and disposal of electrical equipment shall be done in accordance with codes and industry standards. Install new conduit and wiring from Trocadero. Provide aesthetically pleasing, energy efficient fixtures that meet IES standard illumination levels.

Path Lighting
Provide path lighting as required in the park. Provide power pedestals if no electrical service nearby. Provide the necessary conduit and wiring for power. Provide aesthetically pleasing, energy efficient fixtures that meet IES standard illumination levels.

Conclusions

The existing Switchboard at the Stage Area currently satisfies the need for power for sound and light equipment. Depending on the load requirements of the new Stage and Performance Building, the existing State Area Switchboard, Transformer and feeders may be retained with the necessary modifications/relocation.

Site lighting can be improved by replacing deteriorated shoebox style lighting with energy efficient fixtures that meet IES standard illumination levels and by providing lighting for reconfigured Pine Lake Parking Lot. Path Lighting is also recommended, but may require the installation of service pedestals if there is no electrical service nearby.

NATURAL GAS SYSTEM

Overview

Currently, natural gas is supplied by Pacific Gas and Electric (PG&E) to the Stern Grove valley area, for serving the various buildings in the vicinity of the Trocadero Clubhouse, including the Trocadero Clubhouse, the Ladies Convenience Stations Restroom and the Dressing Rooms. There is no natural gas service to the Pine Lake Park area.

The natural gas supply to the Stern Grove valley buildings is adequate for current use.
We are recommending natural gas services be brought to the new buildings in the two parks for their hot water systems, furnaces and kitchen equipment.

Recommendations

Stern Grove
Discontinue the existing natural gas service extending from the Trocadero Clubhouse to the Dressing Rooms and cap at main.

Provide a natural gas service to the Stage and Performance Building by extending the service from the Trocadero Clubhouse. Include isolation and shut-off valves as required.

Provide a natural gas service to the Garage and Maintenance Storage buildings at the Wawona Area by extending the existing gas line currently serving the Wawona Clubhouse to the new buildings.

The extended gas lines are shown on Diagram 7.5-A of this report.

Pine Lake Park
Provide a new natural gas service to the Pine Lake Field House to be located in the general area west of the Pine Lake Parking Lot and to the Maintenance Corporation Yard to be located north of the Pine Lake Parking Lot.

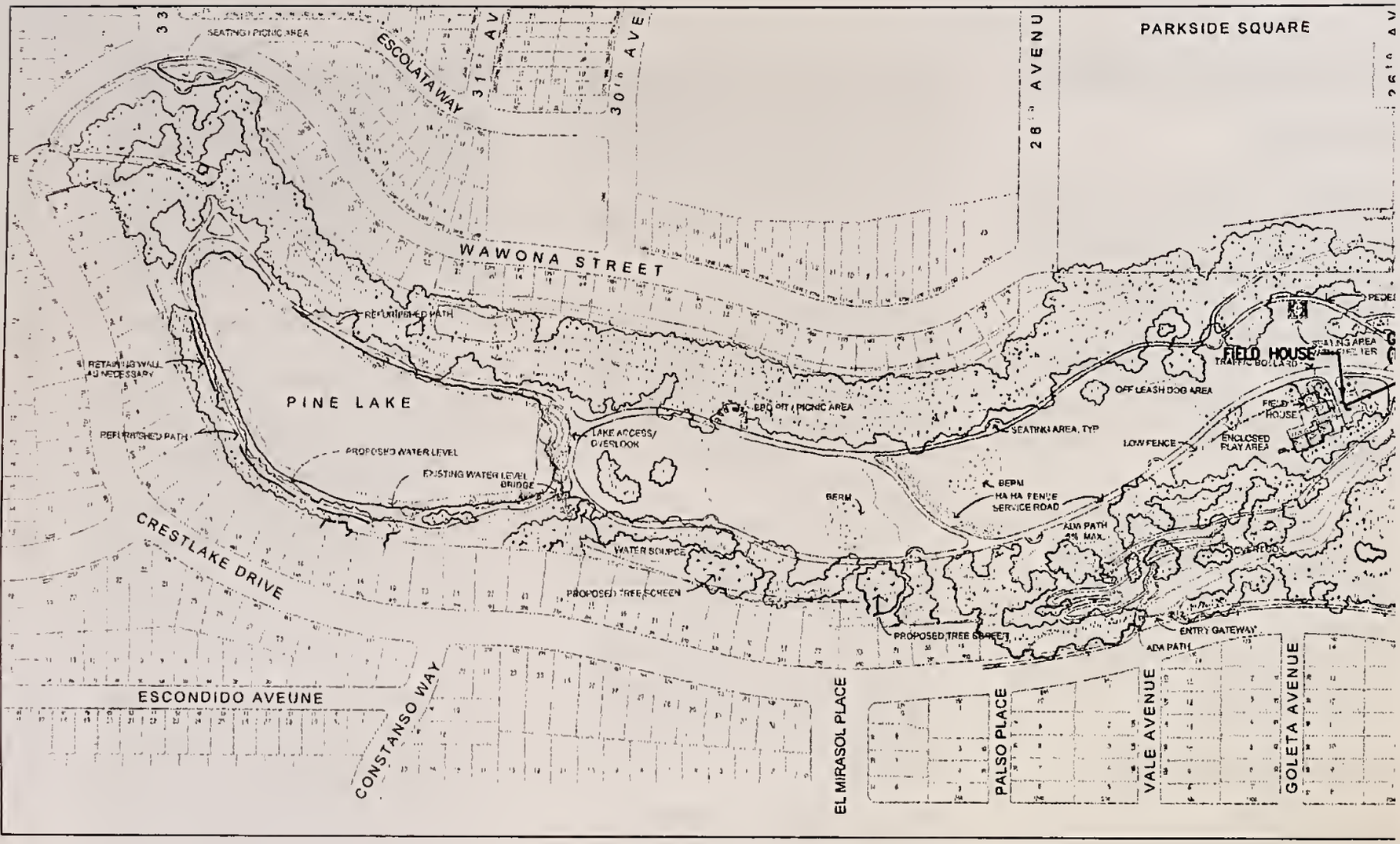
The new natural gas service would be off the gas main at 25th Avenue and Wawona and would extend down to the Maintenance Corporation Yard building and would include a PG&E gas meter. A branch line would lead to the Pine Lake Clubhouse. Include isolation and shut-off valves as required.

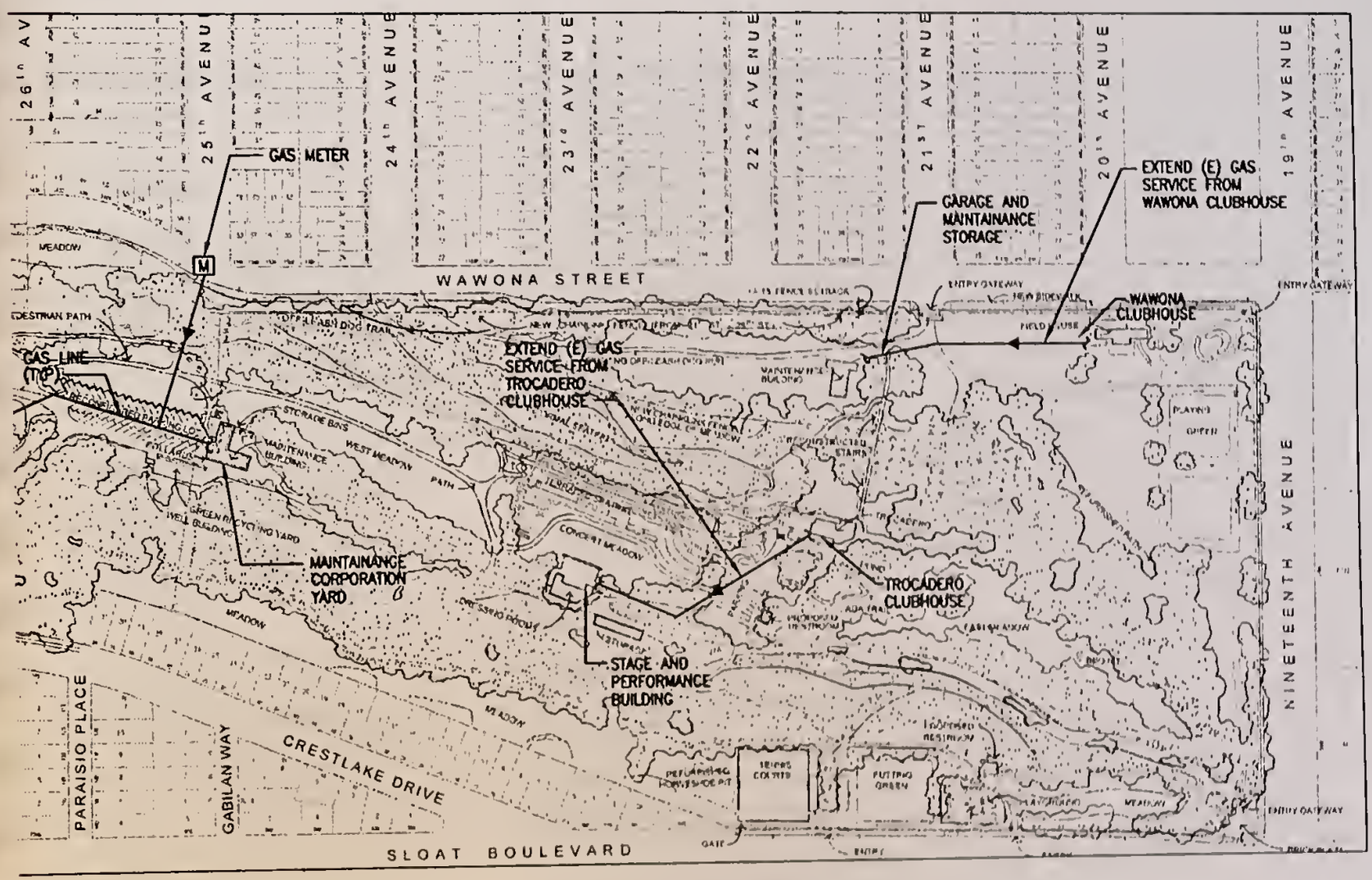
The new gas line is shown on Diagram 7.5-A of this report.

Conclusions

The use of natural gas as opposed to electricity for operating the proposed field house's water heaters, furnaces and kitchen equipment would minimize operational costs due to the lower costs of natural gas.

Therefore it is recommended that a new natural gas service be provided to the Field House at Pine Lake and Maintenance Corporation Yard and lines extend for the Garage and Maintenance Storage, and the Stage and Performance Building.


PARKSIDE SQUARE
WAWONA STREET
ESCOLATA WAY
31st AVE
30th AVE
28th AVENUE
PINE LAKE
RETAINING WALL AS NECESSARY
REFURNISHED PATH
PROPOSED WATER LEVEL
EXISTING WATER LEVEL
BRIDGE
LAKE ACCESS/ OVERLOOK
BBQ/ PICNIC AREA
SEATING AREA, TYP
FIELD HOUSE
OFF LEASH DOG AREA
LOW FENCE
ENCLOSED PLAY AREA
BERM
HA HA FENCE
SERVICE ROAD
ADA PATH 5% MAX
OVERLOOK
WATER SCUPPER
PROPOSED TREE SCREEN
PROPOSED TREE SCREEN
ENTRY GATEWAY
ADA PATH
CRESTLAKE DRIVE
ESCONDIDO AVEUNE
CONSTANSO WAY
EL MIRASOL PLACE
PALSO PLACE
VALE AVENUE
GOLETA AVENUE



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SCALE: 1" = 250'-0"

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STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

FUEL SYSTEMS-NATURAL GAS SUPPLY

DIAGRAM NO. 7.5-A

COMMUNICATION SYSTEM

Overview

The Sigmund Stern Grove and Pine Lake Park areas have very poor phone service with no communication systems such as PA systems, emergency call boxes, etc. The existing phone lines are old, but in good condition. Currently, the Trocadero Clubhouse has two phone lines, one for the caretaker and one for the staff (753-7048). The Minimum Point of Entry (MPOE) at the Trocadero Clubhouse needs replacement.

Just outside the Trocadero Clubhouse is a Pacific Bell payphone. This pay phone is not accessible due to paving, cross slope and location of adjacent elements. There are two payphones at the main entrance at 19th and Sloat blvd. These phones are ADA compliant. The payphones are very heavily used when the summer concerts are held at the Grove. Another phone service in the area is a line that the event promoters turn on during the summer concerts. This line is located near the stage area, in dressing room number six, and used to contact the paramedics in the event of an injury. This line originates from Sloat Boulevard and, according to staff, is delivered by an overhead cable. The overhead line used by the event promoters does not meet the demand of the Festival. The overall condition of the lines are good, however, the underground cables are quite old and in time will fail.

Pine Lake Park has no phone service or emergency call boxes.

For more information on the existing communication systems please see Section 2.6 - Park Furnishings of this report, and Section 6.4 -Utilities and Infrastructure of the Site Assessment Report.

Recommendations

A. Install a new ADA compliant pay phone
B. Relocate existing phones to meet ADA requirements
C. Add emergency call boxes
D. Replace the Minimum point of Entry at Trocadero Clubhouse
E. Replace existing phone lines and underground cables.
F. Add additional phone lines
G. Add additional emergency call boxes

PARK LIGHTING
(See diagram 7.7-A)

Overview

Existing lighting in Pine Lake Park and Stern Grove is limited. The buildings have lighting. The Stern Grove Parking Lot and the entry road from the Sloat Blvd. and 19th Avenue do have lighting. There is no path lighting leading from the Stern Grove parking lot to the Trocadero Clubhouse. Pine Lake Parking Lot has no lighting. Path lighting throughout the rest of park is non-existent.

Fig. 7.7.1 – The entry road into Stern Grove from 19th Ave. / Sloat Blvd. Is one of the few park areas which is lit.

Recommendations

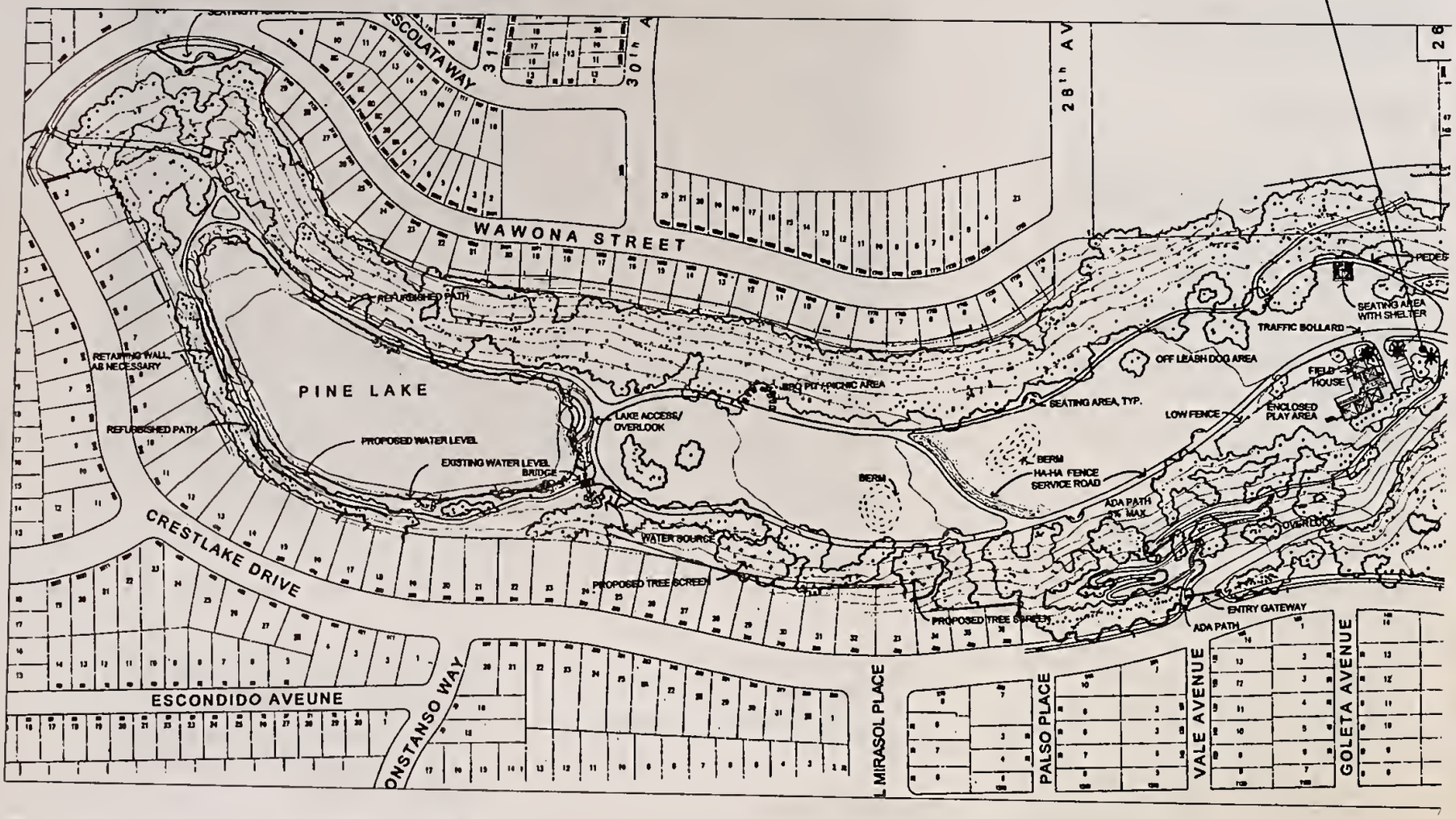
New lighting should be added to the following locations:

A. Entry at Sloat Blvd. and 19th Ave.
B. New Sloat Blvd. Restrooms and Playground Area.
C. The accessible path connecting the Stern Grove Parking Lot, Restrooms and the Trocadero Clubhouse
D. The valley floor east-west pedestrian path from the Stern Grove Parking Lot to the west end of the Pine Lake Parking Lot
E. Pine Lake Parking Lot
F. The path between the Pine Lake Parking lot and the new Field House
G. Wawona clubhouse patio/exterior.
H. Reconstructed stone stairs in Stern Grove.

Conclusion

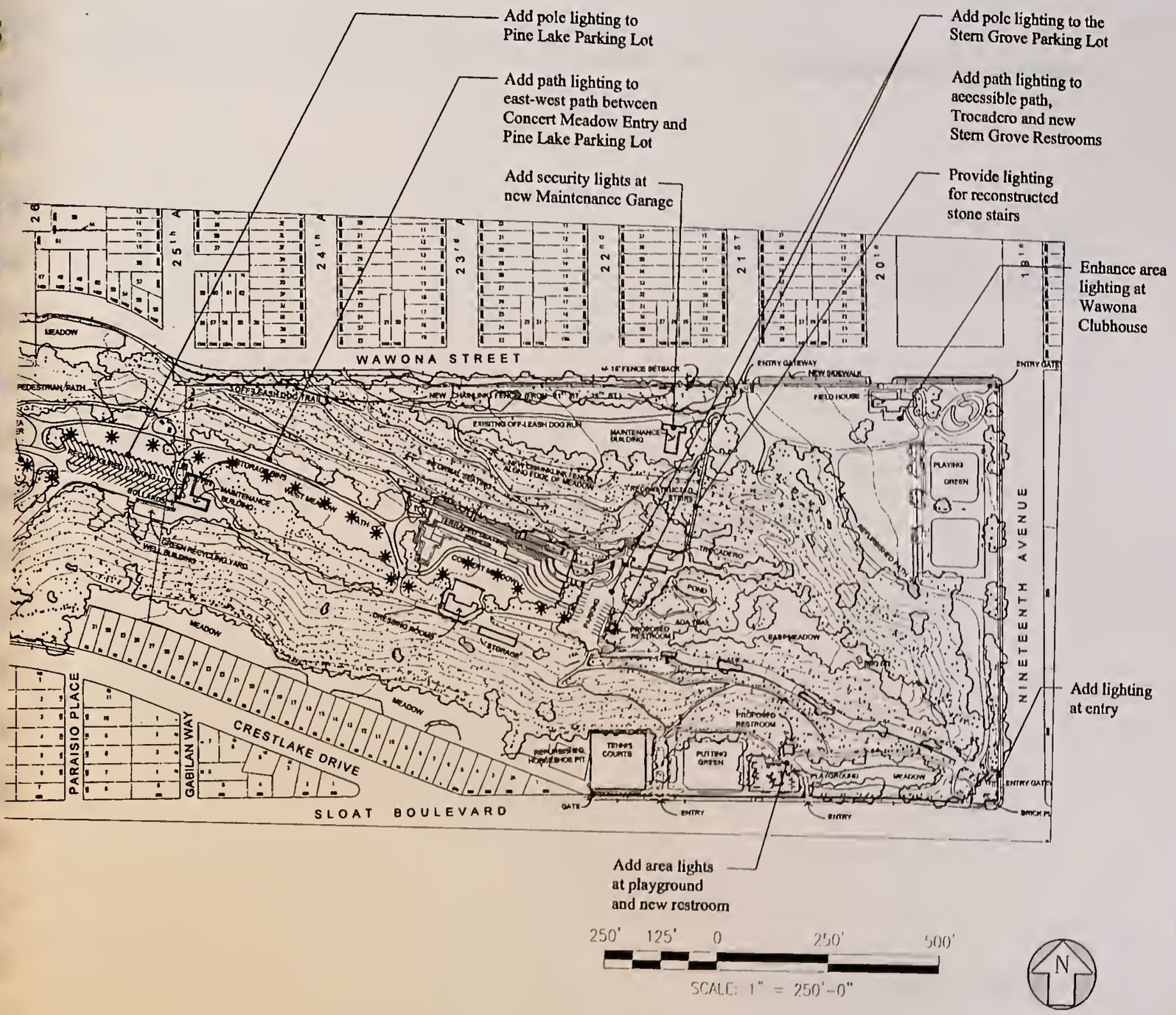
Lighting enhancements will ensure a higher quality and safer experience for park users. New lighting in Stern Grove will provide for a lit pedestrian connection between the Trocadero and the new Pine Lake Field House. This will allow for increased aesthetics and safety during night uses in Stern Grove. New and additional lights at park buildings and the main 19th and Sloat Blvd. entry will visually enhance those areas while discouraging unwanted after dark activities.

Add path lighting on pedestrian path between Pine Lake Parking Lot and Field House entry



General Recommendations

Add pole lighting in locations indicated on plan. For more detailed information, see Section 7.7 - Park Lighting


Add pole lighting to Pine Lake Parking Lot
Add path lighting to east-west path between Concert Meadow Entry and Pine Lake Parking Lot
Add security lights at new Maintenance Garage
Add pole lighting to the Stern Grove Parking Lot
Add path lighting to accessible path, Trocadero and new Stern Grove Restrooms
Provide lighting for reconstructed stone stairs
Enhance area lighting at Wawona Clubhouse
Add lighting at entry
Add area lights at playground and new restroom
WAWONA STREET
NINETEENTH AVENUE
CRESTLAKE DRIVE
SLOAT BOULEVARD
PARAISIO PLACE
GABILAN WAY
MEADOW
TROCADERO
POND
TENNIS COURTS
PUTTING GREEN
PLAYING GREEN
FIELD HOUSE
MAINTENANCE BUILDING
PROPOSED RESTROOM
ENTRY GATEWAY
ENTRY GATE
250' 125' 0 250' 500'
SCALE: 1" = 250'-0"
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STERN GROVE AND PINE LAKE PARK IMPROVEMENT PLAN

Park Lighting

7.7-A

MAINTENANCE AND OPERATIONS

Maintenance and Operations Areas

MAINTENANCE AND OPERATIONS

Overview

Though chronically strained by eroding budgets, consistent park maintenance will be vital to the sustainability of improvements. A renewed commitment will be required by the Recreation and Park Department to retain and fill maintenance positions for park staff.

Maintenance for the parks has been historically understaffed, and resources stretched thin. Only five Gardener positions are in place for both parks, and one of those positions (dedicated for Pine Lake Park) has been vacant since 1999, and has not been filled due to budgetary restrictions. The number of supervisors, gardeners and operators should be increased to ensure proper care of the park landscape and facilities.

Moreover, the fact that supervisors, staff members, new and relief workers, contractors and volunteer groups appear to perform work according to handed-down knowledge and field experience - reflects an inefficiency not affordable when staffing is consistently low. Explanations, guidelines, procedures, and design details to help make informed decisions should be systematically available to those working in any capacity for the park.

Fig. 8.1.1 – Current meadow irrigation is done with manually placed sprinklers.

To this end, the foremost recommendation is to develop and publish a Park Maintenance and Operations Manual for Stern Grove and Pine Lake Parks. The Manual would also serve as an annual checklist of work completed as well as a tool to substantiate budgetary requests and documentation for grant applications.

Establishing new maintenance buildings and corporation maintenance yard to consolidate equipment and materials in adequate space for organization, safety and access is discussed in Section 6.0 - Buildings and Structures.

Please refer to Section 9.1 – Park Management for detailed recommendations related to improving park staffing for management, maintenance, and operations.

MAINTENANCE AND OPERATIONS AREAS

Park Maintenance Recommendations

Publish a Park Maintenance and Operations Manual for Stern Grove and Pine Lake Parks. Consolidate applicable park-wide information and construction details related to daily, seasonal and urgent care for the following categories:

Landscape Work

1. Forest management
2. Failure prevention
3. Invasive control
4. Reforestation
5. Wood utilization
6. Irrigation work
7. Park entrances
8. Meadows
9. Planting beds and special areas
10. Erosion control; Grading and drainage
11. Slope planting
12. Non-vegetative slope control
13. Retaining walls
14. Culverts
15. Swales
16. Water bars
17. Catch basins
18. Fire protection
19. Lakes and water features
20. Signage
21. Sign installation and removal checklist
22. Trail markers
23. Regulation signs
24. Special feature signs
25. Interpretive signs
26. Park feature signs
27. Park maps
28. Park furnishings
29. Drinking fountains
30. Benches
31. Picnic tables
32. Barbeques
33. Bollards
34. Fence
35. Gates
36. Rails
37. Rodent control
38. Litter control
39. Special events work
40. Vandalism and graffiti

Active Use Areas

1. Children's Playground
2. Tennis Courts
3. Putting Greens
4. Horseshoe Pits
5. Croquet Greens

Circulation

1. Road and parking
   a) Surface condition
   b) Striping
   c) Speed bumps
   d) Bollards
   e) Traffic signs

2. Trails
   a) Paved multi-use
   b) Unpaved trail
   c) Check list for trails
   d) Stone walls and gutters

Buildings and Structures

1. Trocadero
2. Restrooms
3. Concert Facilities
4. Pine Lake Field House
5. Maintenance Buildings and Pump Houses
6. Corporation Maintenance Yard

Utilities and Infrastructure

1. Water System
2. Sewer and Force Main System
3. Electrical System
4. Natural Gas System
5. Communication System
6. Park Lighting

Provide a Monthly Maintenance and Operations Schedule

For example, Winter Months (November through March) would begin:

NOVEMBER

1. Mow meadows
2. Weed eat along trails
3. Repair fences
4. Repair signs
5. Clear catch basins and culverts
6. Repair swales, ditches and drainage areas
7. Check erosion work
8. Prune

Park Operations

1. Develop a Park Operations Field Report to document problems including theft, vandalism, property damage, dumping, hazards, and lost or found property in order to identify and mitigate problems.

2. Develop a Special Work Request Form for emergency mitigation and repairs, special events and special types of work.

3. Develop a method and program to close the park or park areas in event of disasters, hazards, emergencies, or special uses.

4. Develop Park-wide Accessibility Checklist.

5. Expand Volunteer Programs beyond Friends of Stern Grove and Pine Lake Park and Guardians of Stern Grove. Solicit trail user (hiking, running and bicycling) organizations, dog owners and walkers, recreationalists (croquet, tennis teams, etc.), service organizations, and corporate workers.

6. Initiate Adopt a Trail or Meadow Program.

7. Develop a Volunteer Manual.

8. Require expanded and stringent maintenance responsibilities from Stern Grove Festival Association and other groups.

9. Establish operating agreements with agencies that provide no-fee labor sources. Routinely apply for assistance.

10. Provide public information in the form of regulation signs, special use signs and park maps to help promote responsible use of park resources and to solicit volunteer groups.

11. Provide Construction Details and Guidelines for standard park elements.

12. Provide Construction Details and Guidelines for trail signs.

13. Increase numbers of supervisors and staff. Divide Area Supervisor work into three positions responsible for fieldwork and administration: Park Manager, Lead Gardener, and Recreation Director. Provide ten gardeners, some with specialized skills in trail maintenance, lake management, natural areas, and erosion control. (See Section 9.1 – Park Management and Security)

14. Request maintenance evaluations in labor and materials for new improvements to determine adequacy of maintenance staff.

15. Request maintenance endowments commensurate with repair and restoration of physical features donated to park, for example, memorial benches.

16. Assure automation of new irrigation and lighting systems.

Conclusion

Chronic understaffing has lead to maintenance and operations neglect that, in the long term, escalates into major disorders requiring significant remedial action and costs. Understaffing is the major contributor to ineffective maintenance and operations and should be remedied with proper staffing and supervisoral direction.

In addition, championing the value of volunteerism as a source of land stewardship must be actively sustained.

Volunteers as well as supervisors and staff will make better-informed decisions by using a manual with guidelines and construction details for maintenance and operations. Such a manual facilitates simple, sturdy and consistent work.

Developing and publishing a Park Maintenance and Operations Manual for Stern Grove and Pine Lake Park is a foremost recommendation. This will greatly assist park staff in consistent, effective, and efficient maintenance efforts, and will help ensure the longevity of the park landscape and amenities.

PARK MANAGEMENT

Park Management
Park Programming

PARK MANAGEMENT AND PROGRAMMING

Overview

Park management is a monumental task not easily performed by a single person. In fact, management decisions historically have been a shared responsibility of five tiers of authority, from General Manager to Area Supervisor. The Area Supervisor directly manages Stern Grove and Pine Lake Park with essentially twofold emphasis: 1) overseeing parkland maintenance and operations and 2) coordinating logistical needs for events and programs. Five gardener positions, an unrealistically small number, are designated to maintain the parks under the Area Supervisor. For protracted periods of time, the positions are not completely filled for budgetary reasons.

The combination of special and regular events such as the free Sunday concerts for 10 summer weekends, summer camp, rental events at the Trocadero, picnicking, hiking and dog walking establish Stern Grove and Pine Lake Park as an ever-popular destination as much as an ever-worn down environment. Deferred maintenance abounds and operations are far from systematic. No one person is able to handle maintenance and operations with steady adequacy.

Fig. 9.1.1 – The West Meadow

While physical and perceived security are not urgent issues and past random acts of vandalism have been infrequent, the increase in events and visitor usage with diminishing police patrols may warrant the use of other measures to help minimize and mitigate potential incidents.

This chapter includes the following:

9.1 Park Management
9.2 Park Programming

PARK MANAGEMENT

Recommendations

Develop and publish a Maintenance and Operations Manual for Stern Grove and Pine Lake Parks as a management and field tool. The checklists within the Manual would serve as a self-audit, substantiate budget requests and document information needed for grant requests. (See Section 8.1 - Maintenance and Operations)

Divide Area Supervisor into three working supervisory positions, one focusing on Maintenance and two focusing on Operations; Park Manager, Lead Gardener and Recreation Director. All three would contribute to fieldwork in addition to performing administrative work; some overlap is anticipated. The Park Manager would coordinate logistics for special events and routine programs.

A. Create a Park Manager Position

- With the Lead Gardener, processes Park Operations Field Reports identifying hazards and problems and decides on necessary course of action.
- Processes Work Request Forms
- Authorizes temporary or permanent closures to entrances, trails or features based on park-wide accepted situations; posts park-approved signs announcing closure.
- Evaluates priority of and recommends accessibility improvements; designates materials; assures conformance.
- Oversees public relations issues
- Updates park map (proposed).
- Contacts community labor resources such as California Conservation Corps (CCC).
- Reviews, updates and approves construction details for Maintenance and Operations Manual.
- Monitors and documents sign placement and removal.
- Oversees security issues:
  - Routine.
  - Serves as liaison to Taraval Police Station and other Stations as needed.
  - Ascertains necessary security measures required by special events coordinators.
  - Assesses and documents damage sustained by events.
- Assesses and documents vandalism; advises mitigation measures.

B. Create a Lead Gardener Position

- Trains and assigns work to gardening and field staff, special crews, volunteers, and oversees work by contractors.
- Requests maintenance assistance through Work Request process.
- Co-authors Maintenance and Operations Manual.
- Reviews, updates and approves construction details included in Manual.
- Establishes maintenance priorities for park work and special events; and checklists for completion.
- Provides Typical Checklists: Trails, Sign Installation and Removal, Recreation Areas, and other main features. Oversees implementation of checklists.
- Provides Monthly Maintenance and Operations Schedule. Oversees completion of monthly maintenance. Reports incomplete work.
- Reviews Park Operations Field Report and decides on necessary course of action.

C. Create a Recreation Director Position

- Coordinates and supplies volunteer groups with necessary information and tools.
- Receives, reviews and responds to neighborhood and special interest requests; coordinates logistics for special non-permit events.
- Coordinates logistics and post-event clean up for special programs.
- Serves as liaison to Trocadero caretaker.

Improve security measures.

- Improve visibility into vulnerable areas by thinning and lowering vegetation.
- Increase overhead lighting.
- Install emergency call boxes at major nodes, adjacent to park signage.
- Install park regulations and emergency information at major nodes.
- Provide kiosks for posting suspicious behavior.
- Promote community vigilance.

PARK PROGRAMMING

Overview

When Rosalie M. Stern dedicated Stern Grove to the City, she stipulated that the land be preserved as a public park, to be used for "music, dramatics, and pageantry." Today, these are among the park's many uses. Stern Grove and Pine Lake Park may be two separate sites by name and property boundaries, but they act as one continuous site for programmatic use. For major events like the summer concert series, users enjoy both park sites. Besides music, dramatics and pageantry, the facility plays host to event rentals, summer camps, senior citizen and community group functions, and unique recreational groups and activities.

Program Uses

Concerts/Performances
The Stern Grove Festival Association has hosted the summer concert series in the Grove annually since 1938. These free Sunday concerts are held over ten weeks; each draw up to 15,000 visitors to the event. The crowd often arrives as early as 7:00 a.m. for the 2:00 p.m. concerts. Prior to the concerts, historic tours of the Trocadero and the grounds are hosted at 11:00 a.m., a pre-concert lecture and discussion is held at the Trocadero at 12:00 noon, and informational and vending booths are organized around the parking lot. Parking is allowed in the Pine Lake Meadow through the Crestlake Drive/Vale Avenue entrance to the park. A shuttle transports senior visitors down to the concert meadow from the entrance at Sloat Boulevard/19th Avenue.

In addition to the Stern Grove Festival concerts, other performances are held in the grove. Dramatic theater is occasionally performed on the stage, and Bill Graham Presents has hosted concerts at the site. The neighboring community is concerned about the size and volume of the performance events. The Festival Association has held neighborhood meetings to discuss ways to alleviate these concerns.

Figure 9.2.1
The performance stage looking west on a typical park day

Rentals
The Recreation and Park Department's Permits and Reservations office coordinates with the Festival Association for their events, in addition to handling the other event rentals for the facility. The Trocadero Clubhouse is a very popular rental venue. The historic building has been host to wedding receptions, parties, community group luncheons and dinners, and the summer Camp Gourmet for kids. The Trocadero is rented/used an average of 5 days per week. Other reservation venues in the park include the Pine Lake Field House and surrounding picnic area, the various picnic areas with a barbecue, and groups of tables throughout the park.

Reservations for these facilities can be made by phone or in person at the Pioneer Log Cabin in Golden Gate Park during standard office hours. The reservation fee, if required for the facility, along with a formalized written description of the event including the number of people attending, is due to the Permits Office within 5 working days from the date of the request.

Day Camps

Figure 9.2.3
Summer Day Camps have been a tradition in the park.

The Recreation and Parks Department runs two summer day camps at the Pine Lake Field House and the Trocadero Clubhouse. The Camp Gourmet meets at the Trocadero weekdays from 10:00 a.m. to 4:00 p.m. and has a maximum of 20 campers per week creating dishes by cooking, baking or grilling. The natural setting and sensitive environment surrounding the Trocadero does not mesh well with the youthful activities of the campers during breaks between camp projects. Since Camp Gourmet has no dedicated storage area in the clubhouse, they use the heater room to store equipment during the off-season.

Day campers from the Pine Lake Day Camp utilize the Pine Lake Clubhouse area. The camp activities include games, hikes, evening campfires, nature activities, arts and crafts and other special events. The camp has a maximum of 120 campers per one-week session and meets weekdays from 8:00 a.m. to 4:00 p.m., except for Thursdays. On Thursdays, the camp begins at 1:00 p.m. for an evening cookout and campfire program that ends at 7:30 p.m.

Project Insight

Project Insight provides a wide variety of quality recreation and educational activities for people with disabilities in the San Francisco Bay Area. Headquartered in the Wawona Clubhouse. It serves children, teens and young adults who are deaf, as well as children, teens, young adults and seniors who are visually impaired. Programs include after-school therapeutic gardening and outdoor and cultural excursions. Project Insight utilizes the clubhouse and the surrounding park grounds, including the patio picnic area on the south side of the clubhouse and street parking spaces.

Senior Citizen Groups

Senior citizen groups have shuttles to the park and use the Trocadero for special events and bingo on a weekly basis.

Recreation Groups/Activities

The San Francisco Croquet Club makes their home on the two croquet lawns in Stern Grove at 19th and Wawona Street. The croquet club has funded and helped rebuild the lawns, installing automatic irrigation, protective fencing and seating facilities. The club holds classes, regular tournaments and free instruction for non-members on the first and third Wednesday of each month.

The Bay Area Ridge Trail runs through the park. This well-marked portion of the trail is part of a 400-mile multi-use trail connecting parks and preserved open spaces along the ridgelines surrounding the San Francisco Bay. More than half of this trail is complete and in use. From east to west, the trail enters Stern Grove at the intersection of Wawona Street and 21st Avenue, runs south as it traverses the valley slope, passes the Trocadero, continues west through the concert meadow and Pine Lake Park, passes the Pine Lake Clubhouse and continues around the north side of Laguna Puerca, back up the valley slope, exiting along Wawona Street near 34th Avenue.

The park's other programmatic features include the children's playground, putting green, tennis courts, horseshoe pits, multiple meadows, and walking and biking trails. Dogs and their owners

frequent the park on a daily basis. While many dogs are off-leash in these areas, an official off-leash area for dogs is located along Wawona Street between 21st and 23rd Avenues.

Recommendations

Stern Grove and Pine Lake Park programming is largely successful. The following specific actions are intended to improve the current programmatic approach.

Concert/Performances

A. Festival concert attendance should not grow. The community has expressed a desire to prevent concert expansion or commercialization.

B. The Festival Association needs to work closely with the park staff to facilitate maintenance and upkeep of concert areas and surrounding park landscape. Specifically, trash pick up after concerts needs to be coordinated.

Pine Lake Day Camp

A. Pine Lake Camp should move to the new Field House facility, which will provide many new amenities for the day camp and for others (rental users, etc.)

B. Separation between the dog area and the day camp will be needed to lessen the potential for conflicts between the dogs and the children. A low, unobtrusive fence, screened by vegetation, will delineate the Field House patio and lawn area to provide separation and privacy for the Day Camp or rental users.

Recreation/Group Activities

Officially designate an off leash dog area in the Pine Lake Meadow. (See Section 4.3 – Designated Pet Areas)

Conclusion

Although the Sigmund Stern Grove is best known for its annual summer concert series, Stern Grove and Pine Lake Park have various events and activities programmed throughout the year. This facility acts as a regional venue for performances, graduations and other events, a city venue for summer camps, croquet, etc., and a neighborhood park for its surrounding residential communities. Except for crowded concert days, the facility serves as a great retreat on a daily basis. The only facility in the park that appears over-utilized is the Trocadero Building. The building is almost constantly hosting events, often with overlapping and conflicting activities. The new Field House facility will help to alleviate the demand on the Trocadero Clubhouse. The Field House will have a new large meeting room that will be able to host community meetings, receptions, as well as providing an indoor gathering place for children attending the Day Camp.

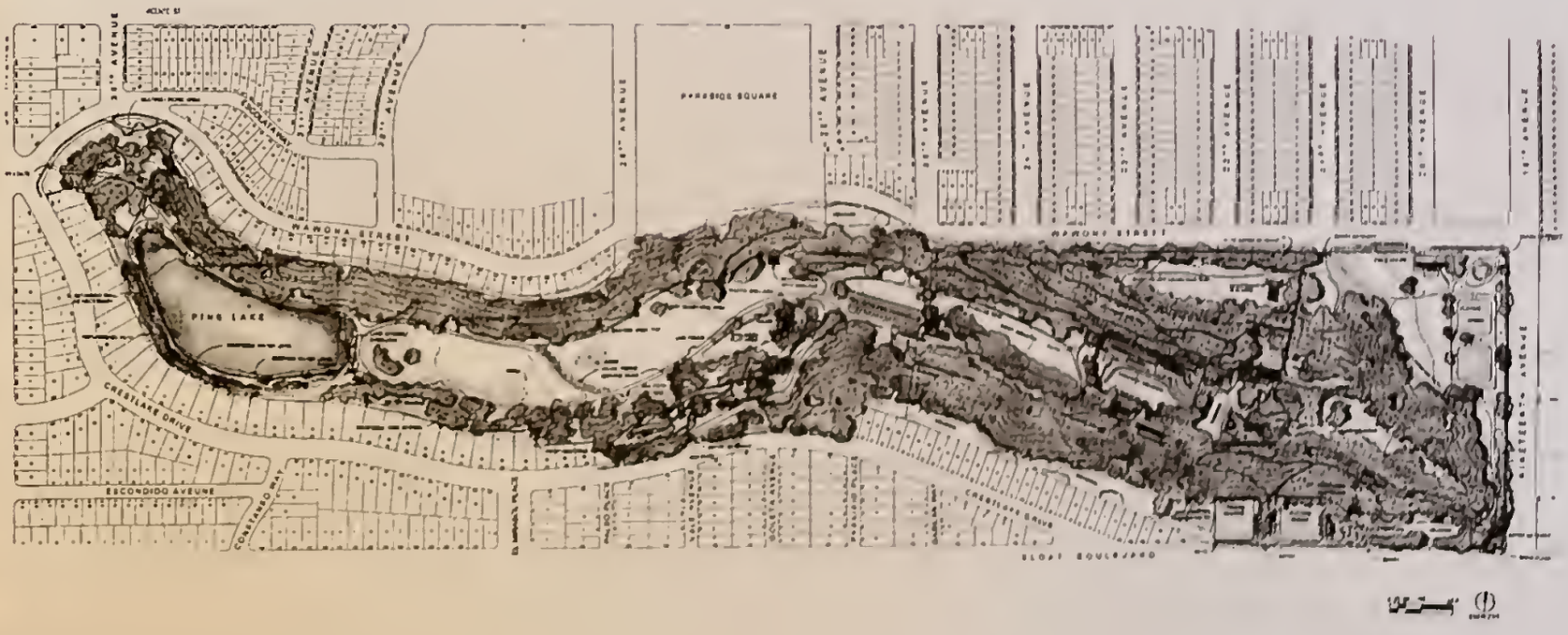
IMPLEMENTATION AND PHASING

IMPLEMENTATION AND PHASING

Overview

This chapter provides discussion and recommendations for the following at Stern Grove and Pine Park:

10.1 Funding Needs and Phasing of Improvements
10.2 Phasing Strategy



FUNDING NEEDS AND PHASING OF IMPROVEMENTS

Overview

The implementation of the Conceptual Design plan and recommended park improvements represents a formidable park renovation campaign. The scope of renovations begins at the level of park infrastructure, and extends through almost every park facility, system, and feature.

The cost for the entire scope of park renovations is estimated to be over $36 million, only a portion of which will come from the Recreation and Park Department's Capital Improvement program. However, the Stern Grove Festival Association will be making a significant contribution towards the costs of improvements to the performance facilities and concert meadow. But the remainder of the funds will need to be identified and appropriated by the Recreation and Park Department.

Consequently, park renovations will be phased over a number of years to make funding feasible, as well as to keep disruption to the parks manageable.

This section will outline a summary of projected costs, and describe a phasing strategy.

Projected Costs for Renovation

The cost estimate outlined below is broken down into nine groupings of park work:

1. Natural Areas/Pine Lake,
2. Performance Meadow,
3. Buildings,
4. Circulation,
5. Utilities and Infrastructure,
6. Maintenance and Operations,
7. Planting and Erosion Control,
8. Activity Areas, and
9. Park Perimeter & Entrances.

Cost Estimate Outline

Improvement Work Category	Recommended Budget
1. Natural Areas/Pine Lake	2,981,000
2. Performance Area	9,118,000
3. Buildings	4,751,000
4. Circulations	3,891,000
5. Utilities and Infrastructure	6,716,000
6. Maintenance and Operations	2,274,000
7. Planting and Erosion Control	790,000
8. Activity Areas	1,614,000
9. Park Perimeter and Entrances	4,468,000
TOTAL PROJECT COSTS	**$36,603,000**

PHASING STRATEGY

The Need for Phased Improvements

The estimated cost for the Conceptual Design implementation requires that the renovation be broken into phased projects. A phasing strategy has been developed which recommends a breakdown of the entire scope of improvements into six phases. Each proposed phase is focused around the renovation of a major park feature, or group of like features.

The six proposed phases are listed below, with initiation dates under the Recreation and Park Department's Capital Improvement Plan identified:

- Pine Lake and Pine Lake Meadow Phase (2002-03) (2003-04?)
- Performance Area Phase (2002-03) (2003-04?)
- Pine Lake Field House Phase (2004-05)
- Trocadero Renovation Phase (20004-05)
- Landscape and Infrastructure Phase (2003-04)
- Park Perimeter and Entrances Phase (not identified, projected 2005-06)

Phase Summary Descriptions

Pine Lake and Pine Lake Meadow Phase - $4,448,000

- Renovation of Pine Lake and surrounding bank areas: limited dredging at west end, invasive aquatic plant removal, raising of the water level, construction of a water source to feed the lake, bank revegetation and temporary vegetation establishment fence, removal of 6-8 eucalyptus trees along south bank for light windows/trail improvements.
- Lake access: New overlook and access point at east end, one additional access point near west end.
- Improve paths and trails around Pine Lake: Trail restoration, ADA compliance.
- Improve Pine Lake Meadow: Automatic irrigation system, improved circulation, delineation of designated off-leash dog area, new furnishings, erosion control and trail improvements for adjacent slopes.
- Related Infrastructure improvements including refurbished well pump and house.

Performance Area Phase - $12,194,000

- Improved Concert Meadow: new terraced seating, improved circulation, and improved informal seating, automatic irrigation system.
- New performance buildings: Stage replacement and backstage enclosure, dressing rooms, restrooms, storage structure.
- Stern Grove Parking Lot area: Resurface and restripe parking, new planting.
- Erosion control on slopes
- Path and trail improvements, including repair of stonewalls and stone stairs near Trocadero; ADA improvements.
- Lighting improvements for major paths and building areas.
- New park furnishings: benches, picnic and barbeque areas, drinking fountains, signage, trash receptacles, bike rack at Stern Grove parking lot.

Field House Phase - $6,610,000

- Demolition of existing Field House
- Construction of new Field House
- Reconfigure Pine Lake Parking Lot
- New Maintenance Corporation Yard facility
- Related Infrastructure improvements including expanded fire protection system.
- Trail improvements
- Erosion control
- Lighting improvements: new lighting at Pine Lake Parking Lot

and major east-west pedestrian path.
- New park furnishings: benches, picnic and barbeque areas, drinking fountains, signage, trash receptacles, and bike rack at Pine Lake Parking Lot.

Trocadero Renovation Phase - $1,939,000

- Trocadero renovation, including new deck, exterior circulation.
- New Restrooms at Stern Grove Parking Lot

Landscape and Infrastructure Phase - $3,462,000

- New Maintenance Garage and Storage Shed at Wawona St. and 21st entry.
- Demolition of existing maintenance garage.
- Automatic Irrigation for meadows.
- Activity Area Improvements
  - New Restrooms
  - New playground along Sloat Blvd.
  - Restore entry trellises at Sloat Blvd.
  - Replace chain link fencing with decorative metal fence
  - ADA access to activity areas
  - Resurface Tennis Courts and improve Horseshoe Pits
  - Improve Croquet Greens
- New park furnishings: benches, picnic and barbeque areas, drinking fountains, signage, and trash receptacles.

Park Perimeter and Entrances Phase - $7,950,000

- Improvements at major entrances:
  - 19th Avenue and Sloat Boulevard
  - 19th Avenue and Wawona Street
  - Vale Street and Crestlake Drive, including new accessible path to valley floor
  - Wawona Street and Crestlake Drive
- Improvements at secondary entrances:
  - Wawona Street and 21st Avenue
- Path and trail improvements, including repair of stonewalls and ADA compliance.
- Erosion Control
- Automatic irrigation for street-level meadows.
- New park furnishings: benches, picnic and barbeque areas, drinking fountains, signage, and trash receptacles.
- Improved ADA parking at park entrances.

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ACKNOWLEDGEMENTS

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The Stern Grove Festival Association

The San Francisco Public Utilities Commission

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